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OCTOBER, 1920

NUMBER 4

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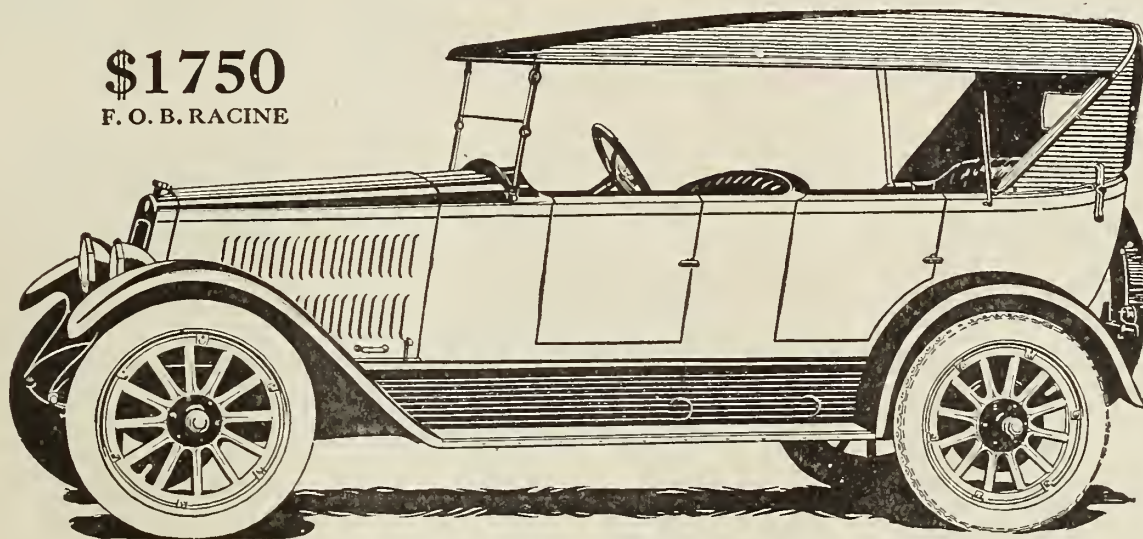
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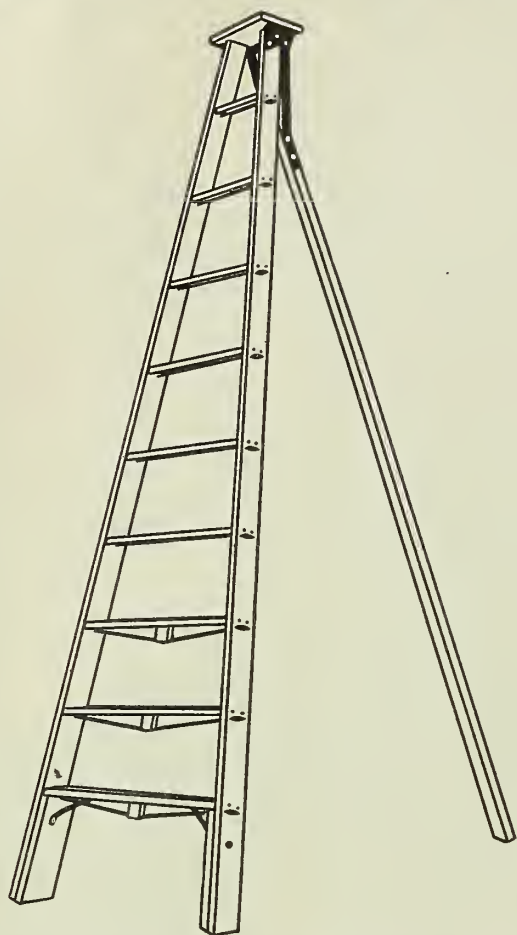


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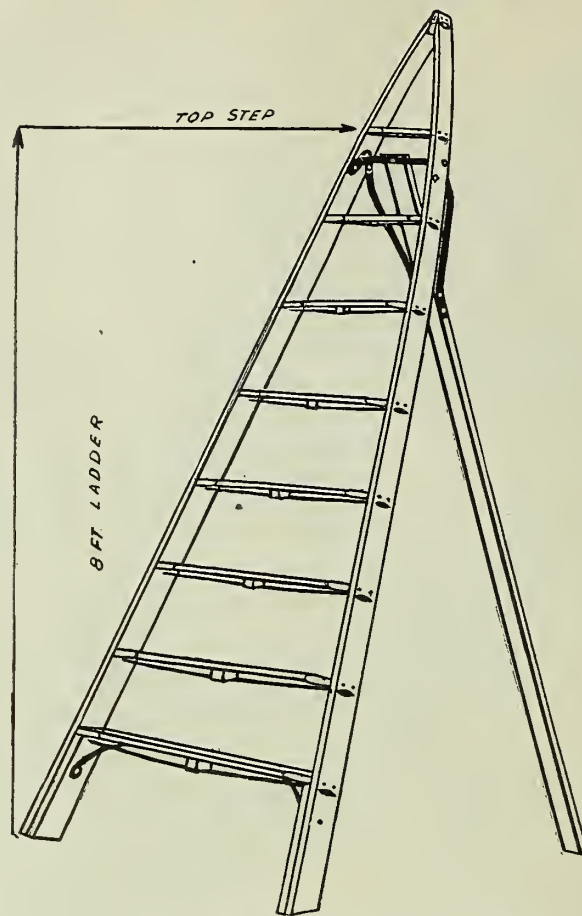
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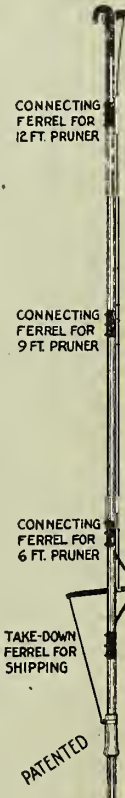
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The Propagation of Apple Trees on Their Own Roots

By J. K. Shaw, of the Massachusetts Experiment Station

THE methods of propagation of tree fruits in common use among nurserymen produce trees the trunk and crown of which are of the variety desired, while a part or the whole of the root system is of seedling origin. In many cases roots are thrown out from the base of the scion that are, of course, of the variety of the aerial part of the tree, but it is doubtless true that in most cases, especially with budded trees, the seedling forms the greater part, if not the whole, of the root system. This means that in any orchard of any one variety there is a great deal of variation in the root systems. No two are of identical constitution. This is due to the complexity of the genetic constitution of our cultivated varieties of apples. Seedlings of a single variety, even if from self-fertilized seed, show great variation and many different combinations of characters.

It is reasonable to suppose that these differing seedling roots should cause more or less modification of the top, and there is abundant evidence that this is the case. The most common example is found in dwarf trees. There are many types of the common apple that, when used as stocks, inhibit the growth of the scion, and those that will throw out roots from the stem readily are used as dwarfing stocks. It is well known that dwarf stocks influence also the size, color, quality and season of maturity of the fruit. It is therefore reasonable to believe that many of the individual differences among the trees in an orchard may be due to the varying seedling root systems, and such individual differences, especially in productiveness, are greater than is generally realized. If trees could be propagated on their own roots, or on the roots of a clonal variety known to be well suited to the scion variety, much might be gained in uniformity and fruitfulness in the orchard.

Another advantage in having trees grafted on roots of known varieties lies in the greater resistance to insects and diseases of the roots that can be secured in this way. This idea is in practical use in Australia and South Africa, where the method is used to avoid serious trouble with the root form of the wooly aphis. This insect

was early imported from America, and is there known as the American blight. It was found that Northern Spy roots were highly resistant to this insect, and it is now the usual practice in those countries to propagate all varieties on roots of the Northern Spy, or some other resistant variety.

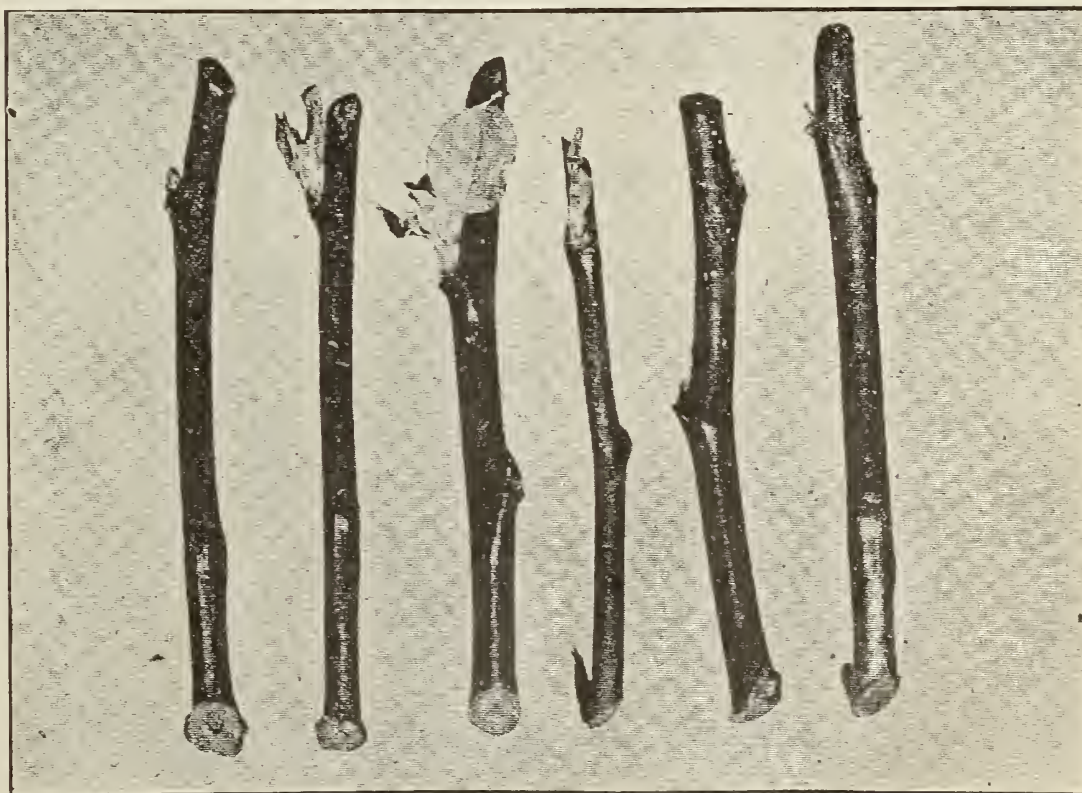
It has been the observation of the writer that roots of different varieties differ in their susceptibility to crown gall, and it is reasonable to suppose that the same may be true with other root diseases. Root troubles are the cause of failure of bearing trees more often than is generally realized. Propagating varieties on known roots offers a chance of overcoming, to a considerable degree, at least, many of these root troubles.

In the northern part of the apple belt, especially in the prairie northwest, resistance of the roots to extreme cold becomes important, and it is considered highly desirable to get varieties on their own roots in order to avoid root killing in winter, when the temperature of the

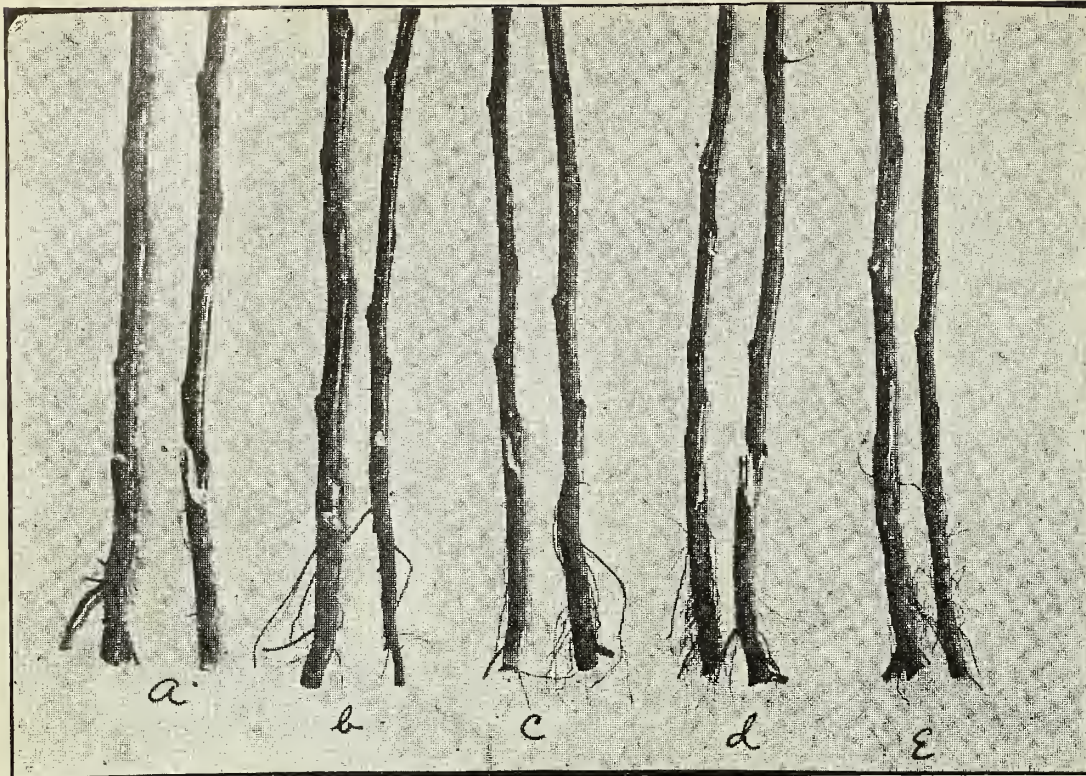
soil falls to an extremely low point. If trees of the varieties suited to these conditions could be worked on roots known to be of extreme hardiness, it would contribute to the longevity and consequent fruitfulness of the orchards.

If we concede that trees growing on roots of known varieties, either as own-rooted trees or trees on roots of other known varieties, may be more desirable for orchard purposes than trees on miscellaneous unknown seedling roots, there are suggested many problems for investigation. For example, what varieties on their own roots are resistant to the various insects and diseases, and what ones possess extreme hardiness to severe cold? What is the effect of different varieties used as root systems on the growth and fruitfulness of the scion variety?

Before these problems can be solved it is necessary to propagate trees on their own roots. The general question of the interrelation of stock and scion is under investigation at this station, and it is the purpose of this paper to



Green wood apple cuttings, showing callus formation. From left to right: Yellow Transparent, Fall Pippin, Red Astrachan, Bough, Ben Davis, Wagener.



Matching cambium in root grafts: (a) One side only; (b) Both sides only; (c) Top only; (d) Bottom only; (e) Perfectly matched.

set forth some of the results obtained in propagating trees on the roots of known varieties.

The first step in securing trees on known roots is to induce the formation of roots from the stem of the chosen variety. The methods most used in practice are by cuttings and by layers. It is known that apple wood roots from cuttings with the greatest difficulty, and that only certain varieties root readily by the somewhat slow and cumbersome method of layers. The method of growing trees on Northern Spy roots to secure resistance to the woolly aphis may be termed the nurse-root method. In this method a rather long scion is grafted by any appropriate method on a short piece of seedling root, and planted out in the usual way. Roots arise from the Spy scion, and the seedling nurse root may be removed, leaving the tree on its own roots.

Propagation By Cuttings

There are few published records of attempts to propagate apple trees by cuttings. Doubtless many have been made and not reported, for the uniform results on record may be described in the single word—failure. Professor F. K. Luke attempted to root apple cuttings of various sizes and lengths at cutting bed temperatures of 64° and 67°. All failed to strike root. Luke was able to induce root cuttings to grow with fairly good success.

Attempts to root apple cuttings were made during the summer of 1912. Green wood cuttings three to four inches long were made in early August and September, and set in sand in the greenhouse. Powdered charcoal was also used as a propagating medium, both alone and as a one-half inch layer over sand, with the hope that it might check disease. Bottom heat in varying degrees was used in some cases, also an enclosed propagating frame. In short, an effort was made to provide the best

possible conditions for cuttings. Something over a thousand cuttings of several different varieties were made. The results were much the same in all cases. The cuttings formed a callus, varying somewhat with the variety, and the buds started out until the leaves were about one-fourth inch long. This occupied about two weeks, after which growth ceased. The final result was the same in practically all cases. Of the 1,000 or more cuttings only a single one of the Fall Pippin variety rooted, and that only a single short shoot that was broken off in removing from the sand, so that it failed to grow.

* * * * *

In spite of these failures it is the opinion of the writer that it is possible

to grow apple trees from cuttings. To an inquiry addressed to many of the leading nurserymen of the country, thirty-five replied that they had never seen cuttings or prunings from the trees taking root, while seventeen professed to have observed such an occurrence, though none of them considered it at all common. One nurseryman reported having planted well-callused scions in a mixture of sand and soil, and that "the best stand we ever had was something less than 10 per cent of the cuttings planted." The trees were weak for a year or two. The late T. V. Munson of Denison, Texas, says: "I have often had apple and even peach switches cut from the trees in February and stuck into the ground (very sandy) for label sticks, take root and grow off well."

In the spring of 1913 a considerable number of root cuttings from young trees were planted in the nursery row. No record was kept of them, but they made a good stand though growth was very slow the first season. It is the practice of at least one nursery firm to dig trees already established on their own roots once in two years and cut off the roots for propagation by root cuttings. The trees are then replanted and a new crop of roots grown.

In a later experience of the writer, root cuttings from the root system of bearing trees were used in an attempt to propagate the stock variety. This resulted in almost a complete failure. The roots used were from one-quarter to one-half inch in diameter, and when planted in the open, about three inches long. Others planted in the greenhouse were about one and one-half inches long. Whether older roots propagate with greater difficulty, or whether some unfavorable conditions not readily seen interfered with success, cannot be told with certainty.



Trees rooted from the seedling scion after cutting off seedling nurse roots; two-year-old trees cut back in spring of second year. Tolman at left, Bough at right, showing stronger roots of latter.

Propagation By Layers

The method commonly used in propagating dwarf trees is by some form of layerage. A considerable number of attempts were made to induce root formation by air layerage. Earthen pots were split, and in early August were placed in appropriate position on growing shoots and filled with sphagnum moss. They were kept moist by frequent watering. None of these air layers showed root formation. It proved difficult with the rather small pots used to maintain uniform moisture conditions, and this may have had something to do with the failure.

In the spring of 1917 two-year-old trees growing in the nursery row were cut off three or four inches above the ground and allowed to stool. Later in the summer soil was heaped up around the new shoots to the height of four or five inches. The varieties used were Ben Davis, Bough, Rhode Island Greening and Transcendent. None of these shoots have been separated in an attempt to establish them as independent trees, but investigation in the spring of 1919 showed that most shoots of all these varieties bore small roots, coming out near the junction with the cut-off stump.

Propagation By the Nurse-Root Method

It is well known to most nurserymen that root-grafted trees often send out roots from the scion, and may eventually become established, partially, at least, on their own roots. In an attempt to collect information a questionnaire was sent to the leading nurserymen. About 75 replies were received, and most of these show care and thought in answering the questions. They were suggestive at the outset of this work, and are interesting to review after eight years' work on the problem. The first question was, "Have you ever observed root-grafted apple trees rooting from the scion?" Fifty replies say yes, and six reply no. Especially in the Middle West nurserymen regard it as a common or usual thing, while in the East, South and on the Pacific Coast it seems rather less well known. It may be that rooting is more frequent in the rich, loamy soil of the Middle West, or it may be that it is because the practice of root grafting prevails there more than in the eastern and other nursery regions.

The second question asked, "In what varieties, and in about what proportion of the trees," rooting from the scion had been observed to occur. The general trend of the replies was that all varieties might do so, Winesap being the only sort mentioned as not rooting. Generally the varieties mentioned were those most extensively grown. Ideas as to proportion of trees rooting were diverse, some saying a small percentage and others nearly all.

A question as to the most favorable conditions for rooting brought in nearly every case, when a positive reply was made, the suggestion of the long-scion, short-root graft; deep planting was often suggested; abundant fertility and plenty of moisture were often mentioned; where soil prefer-



Own rooted Red Astrachan two years after cutting of seedling roots.

ence was expressed it was for a sandy or loamy soil.

Methods Used

The first lot of grafts for the purpose of securing trees on known roots were made in 1912, and others were made during subsequent years, including 1917. The method has been to make an ordinary piece root, whip graft, using a straight root two to three inches long, and a scion six to eight inches long. The grafts have been made at various times in the late winter and early spring, most of them in February or early March. For the most part they have been made by student amateurs, and yet they have been as well made as the average of commercial work. It has appeared that there is more dependent on the way the scions were handled before and after grafting than in the skill with which the union was made. To test the necessity for large contact of the cambium layers five different methods or degrees of matching were tested, as follows:

- (a) Matched on one side only, not at top or bottom.
- (b) Matched on both sides, not at top or bottom.
- (c) Matched at top, not at sides or bottom.
- (d) Matched at bottom, not at sides or top.
- (e) Perfectly matched all around.

The variety used was Baldwin.

Where it was desired to avoid matching, the scion or root was cut away, if necessary, to make a space of at least one millimeter. The grafts were then planted and cared for in the usual way.

* * * * *

Discussion of the Results

As a major result of the work two facts are brought out: (1) varieties differ greatly in their readiness to form roots from the scion when propagated by the nurse-root method; (2) there is also great variation within the variety

in the number that form roots from the scion.

Taking up first the varietal differences we find that a few varieties root in all, or nearly all, cases, while only one variety of *Pyrus malus*—Bethel—has failed entirely to yield trees rooted from the scion. Inasmuch as this variety was grown in rather small numbers and under conditions where other varieties gave low percentages of rooting trees, it is probable that Bethel would, under more favorable conditions, give at least a low percentage of rooted trees. Considering the number of varieties tested it seems safe to say that any variety of the common apple may be propagated on its own roots by the nurse-root method.

There are fourteen varieties that have been propagated in considerable numbers in successive years and under different conditions, so that we may feel fairly certain that the percentage rooting is fairly representative for these varieties under the general conditions in which they have grown. Arranged in order of percentage rooting they are as follows:

Bough (Sweet).....	98
Red Astrachan.....	67
Northern Spy.....	58
Ben Davis	51
Wagener	45
Transcendent	45
Baldwin	32
Rhode Island Greening.....	30
Oldenburg	26
Yellow Transparent.....	26
Wealthy	25
Hubbardston	21
Jewett	20
Tolman	3

Coming now to the question of why certain of these varieties root better than others we find a rather difficult problem. We have made few investigations aimed directly at this question, but some discussions may be ventured.

The property of rooting is not directly correlated with vigor. Tolman is fully as strong growing a variety in

Continued on page 31.

The Evolution of Box Apple Packing in the Northwest

By Walter L. Mason, of Hood River, Oregon

THE evolution of the packing table from the old familiar gunny sack covered table to the present highly efficient power grader, reads almost like a romance. One's memory does not have to go back very far to recall the days when the old farm hack and other farm paraphernalia were ejected from the barn to make room for the packing table and the many stacks of boxes, each stack representing a different grade, and possibly two different sizes of sorted fruit.

This transformation has been achieved through necessity—the necessity of greater economy in time and labor. The young orchards of ten years ago have now come into full bearing, and to handle the greatly increased production it has become necessary to discard the old packing methods and employ new ones.

In order that we may visualize the transformation, let us briefly survey the packing house operations for the past ten years. It must be realized that no two growers handle their fruit in the same manner, but the following description, the writer believes to be fairly representative of the methods pursued by the majority of growers.

As this article will only treat with the packing end of the apple harvest we will follow the fruit from the time it enters the apple house or barn until it is ready for shipment. In 1910 the fruit on arrival at the packing house from the orchard, was stacked in boxes from six to nine boxes high, each variety being segregated as far as the usually limited storage space permitted. The fruit was next sorted, and everything made ready for the actual packing operation. The sorting of the fruit was undoubtedly the most tedious and expensive of all the various packing house operations.

A long narrow table, varying in length from five to ten or twelve feet, and some forty inches in width, was used for this purpose. A box of unsorted fruit was placed in front of the sorter, who not only had to determine the grade or quality of the apple, and in some varieties, this meant five separate grades, but also the dividing point between large and small apples. Ranged along the table, and within reaching distance of the sorter, were placed empty boxes into which he placed the sorted fruit. When a box was filled it was placed in a stack representing a special grade or size of fruit. The sorting operation usually continued until the floor space was entirely congested, if the grower was fortunate enough to possess sufficient floor space, the sorting and packing operation were both carried on at the same time. The usual practice, however, was to sort a quantity of fruit, pack it out, and to repeat this process until the entire crop was packed out.

From the stack of sorted fruit the

apples were dumped (and I use this term advisably) on a burlap-covered frame about the height of an ordinary table. The more fruit that was piled on the table the better the packer liked it, as it gave him a greater selection—this piling of the table, of course, resulted in much bruised fruit as often the apples which were first poured on the table remained there for many subsequent pourings. To add to the packer's trouble, several sizes of apples were packed in what was called a "California box." The cubic contents of this box was the same as our present standard box. Why and when it was introduced the writer does not know. That it was finally discarded is something for which the growers are very grateful. As from 5 to 10 different sizes of apples were piled upon the same table at the same time, it often meant that a packer would be compelled to set aside a partially packed box and start on a different sized pack, returning to the first pack only after a sufficient number of apples of corresponding size to his first pack were uncovered, or additional fruit was dumped on the table. It was not at all uncommon to find a packer with 5 or 6 partially completed boxes piled indiscriminately around the table. This, of course, greatly hindered the packer and frequently induced him to top out a box with off-size apples rather than set the box aside when near completion. It was an exceptional packer who could turn out 100 packed boxes a day under this old system, from 60 to 75 boxes per day was the average pack. The box, when completed, was carried from the packing table to the box press, where the tops were clamped down and nailed, the box stamped and stacked for shipment. This roughly was the packing house procedure in 1910. It was not long, however, before increased production demanded more efficient methods, and in the next five years there appeared on the market various combinations of sorting and packing tables, which greatly relieved the old congested packing house conditions, and also helped to reduce the packing cost. The new and outstanding feature of these tables was the combination of sorting and packing facilities. In general they were comprised of a series of packing bins so arranged that each bin was within easy reaching distance of the sorter. One type of table resembled a three-quarter section of a wheel, the sorter stationed at the hub and placing the sorted fruit according to size and grade in bins formed by the rim and the spokes of the wheel. In another type the bins, some 6 or 8 in number, were arranged back to back with a separate gravity canvas chute leading to each bin from the sorting table. In this way a sorter could grade his fruit from a small canvas covered table.

Even under this method it was usually necessary to sort one grade into boxes and pack them out separately later on, as only two grades could be conveniently sorted into the bins and afford any real discrimination in size. About this time, 1915, the first really efficient power graders appeared, and from that date to the present time many have called but few have been chosen. We will, therefore, pass over the discarded and briefly note the outstanding features which are common to most of the present-day power graders.

The power grader of to-day consists of from 10 to 20 bins, according to the number and grades and sizes required, arranged back to back in two equal rows.

On the smaller graders of eight to twelve bins, the bins on one side of the table represent one grade, those on the other side a second grade. On the large machine a number of the end bins are used for a third grade and are fed by a separate conveyor. Apples which fall into the cull class are either carried on over the end of the table by a conveyor and dumped into a box or are deflected by the sorter when they appear on the sorting table.

An endless belt chain or slat conveyor passes over and between these two rows of bins, conveying the apples from the sorting table. The apples on the conveyor are deposited in the different bins, according to size, by either a deflecting belt, counter weight and spring, or some other mechanical device, and these devices have been so perfected in the past two or three years that the uniformity in the size of apples in a single bin is phenomenal.

The sorting table is so arranged that the apples pass in front of the sorter on a belt conveyor and are transferred by the sorter, according to grade, to the different conveyor belts, which pass in front of him. A movable frame on which the packer places his box is attached to the side of the grader, thus permitting the packer to pass from one bin to another on completion of the box.

In most up-to-date packing houses the boxes are conveyed from the grader to the box press on a gravity conveyor, and from the press to a storage stack in like manner. Whereas the development of the box press has not been as revolutionary as the packing table, nevertheless there has been a number of notable improvements to the crude press of ten years ago. Formerly the placing of the tops and cleats and nailing them down was an arduous and slow process. To-day it is done very quickly and with some processes the boxes are stamped at the same operation.

The next ten years will probably

witness many changes in our packing house methods, although it is doubted if they will revolutionize this department of the apple harvest as have the

changes of the past ten years. Probably the changes will chiefly consist in a perfection of our present equipments and methods.

Utilizing the Fruit Crop of the Northwest

By W. H. Olin, Agriculturist Denver & Rio Grande R.R., Denver, Colorado



W. H. OLIN

THE Northwest, including Washington, Oregon, Idaho and the Bitter Root Valley, Montana, has developed into our Nation's best fruit basket. Here fruit is graded to a nicety for color, size and quality. When a grower gets into the Skookum class he knows he is at the head,

for it is one of the highest grade apples grown in the U. S. A. When his butters, jellies and jams are incorporated in Farmer Paul's large and growing family of these delectables, he knows he has reached the present acme of quality. Now comes Mr. Calkins, of Hood River, with a scheme of furnishing fresh cider ad libitum to any consumer without violating any state or national law on beverages. Mr. C. J. Calkins has developed a process of condensing cider to a syrup without giving it a cooked flavor and this cider syrup can be put into barrels, kegs, tins or bottles as the trade may desire. It will, in the syrup stage keep an indeterminate length of time.

The work of Mr. Paulhamus at Puyallup, Washington, with bush fruits, whereby not only the berry crop is conserved, but such a quantity of butters, jellies and jams come to market, it is said that this valley has an annual income surpassing that received by any other valley of similar size in the United States.

Friends let us have a first hand conference with our standing organizations and plants not well understood or known. So that your readers can check up on me, Mr. Editor, we shall give names and locations.

Let us first begin with the work Professor C. I. Lewis is now doing. As professor of horticulture, at Oregon Agricultural college, he did a very strong work. As associate editor of Better Fruit and the American Fruit Grower, Prof. Lewis has been read widely. But the greatest work this man has done he is now doing. He is organization manager of the Oregon Growers' Co-operative Association. His plan is to organize Oregon fruit growers to not only sell their fresh fruits co-operatively, but also to can, to evaporate and to otherwise conserve the by-products of the fruit and vegetable business. August 1, 1919, this Oregon Growers' Co-operative Association was started with 134 members controlling the output of 3,000 acres. September 1, 1920, the association had 1,500 members with 28,000 acres signed up. There are now ten packing plants in as many

different communities. These are standardized plants all using the same machinery. The advantage of this is apparent. Ninety-five per cent of the green fruit sold represents a community pack. The present cost to the grower for this centralized pack is 1c per box. A careful, uniform inspection system is maintained. For each type of fruit, there is one uniform grade, pack and container. This tends to make trade calls stable. This association plan of work is on the basis of helpful counsel in selection of farm fruit plans, to anticipate a one fruit plan in any one section and such a distribution over the territory, as shall give a bush and tree fruit, well adapted to each district; selection of the type that more nearly meets market demands and does best in a given region.

The association also renders helpful suggestions in cultural methods, helps assemble harvest help and after harvest, directs the product to market. It takes more than one swallow to make a summer. We must give the Oregon Growers' Co-operative Association a chance to prove their efficiency. Let us go to the oldest association now going in the Northwest.

A Co-operative Association That Spells Success.

"Olin," said Prof. Lewis, you can not afford to leave the Northwest without visiting the Eugene Fruit Growers' Association. There is the most complete plant in this whole Northwest region."

We found it even so. This association was organized in January, 1908, with 94 stockholders and \$5,000 capital stock. Today it has 685 stockholders and a paid-up capital stock of \$72,160. It has had a continuous existence, a definite plan and purpose from the beginning. This association handles as large a percentage of the fruit in the fresh state as possible for its stockholders.

To protect its stockholders on containers, this plan has a box factory. In 1919 this department cut approximately one and one-third million board feet of lumber into boxes. The green fruit department sent out 32,944 boxes of apples and pears. The ice and cold storage department not only furnishes ice and storage for the fruit products but supplies Eugene city with its ice supply. The canning department of the association put up 80,000 cases of canned goods last year. All vegetables suitable for canning as well as fruits are utilized. This department is of vital importance to truck and bush fruit farmers of this district, encouraging diversified fruit and vegetable farming. The drying

department is one of the largest in the Northwest and the association is able to direct the planting of vegetable and bush fruits so as to have a continuous supply. There is some product canned or dried each month in the year. This makes business for the association so it can maintain its force of labor throughout the year. The vinegar department makes from 25,000 to 30,000 gallons of vinegar each season. There is practically no waste. Whatever the grower has to offer is taken, if the manager feels certain it will sell for enough to pay cost of manufacturing into a salable article.

The fruit remains the property of the grower. When the commodity is sold, the cost of manufacture and sale is deducted and the growers gets the rest. The association carries out a system of financing the growers when in need of money for growing and harvesting their crops. In turn, the association at times, borrows considerable amounts from the grower stockholders. This plan is quite unique and most serviceable to both the stockholders and to the association.

It takes a good manager with a good business head to make this scheme both sound and serviceable to both parties. Mr. J. O. Holt, the secretary-manager, is peculiarly fitted for this position. The writer does not know what salary he receives. Whatever it is, he is competent and earns every dollar he draws. This illustrates why this co-operative plant succeeds. It is due to its sound business policy, its universal support in its district and its efficient business manager. Otherwise it would not have its full 12 years of successful operation when so very many of the co-operative fruit associations in the Intermountain region, founded upon a similar plan, have gone to the wall. One thing more permit us to say, about one division of this association's work. The evaporator run by this association at Eugene City, is reported to be the largest in Oregon. It has 49 tunnels, holding about 4,500 trays, and its capacity is 1,000 bushels per day. It was built for evaporating prunes, but it is also used, in July, for loganberries, and late in the fall, for apples and walnuts. The spray plant of the association furnishes the lime, sulphur and other spray material, already mixed and ready for use. It is furnished to association members, at cost to the plant. Seeds, tools, fertilizer and boxes are likewise furnished at cost.

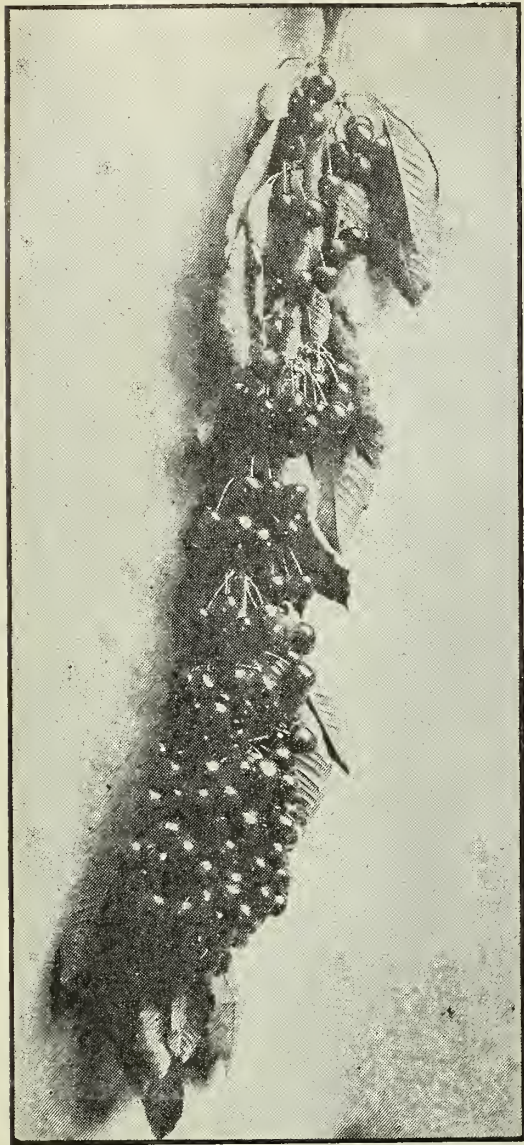
Dehydration Plants of the Northwest.

The writer found in the Northwest three different concerns, each claiming a superior process for abstracting all but a minimum amount of water from fruits and vegetables without breaking down the cellular structure of the treated product.

Mr. A. F. Spawn claims to have been the first man to conceive of a commercial plan for taking water out of fruits and vegetables in this careful

Continued on page 33.

Notable Cherry Crop Production



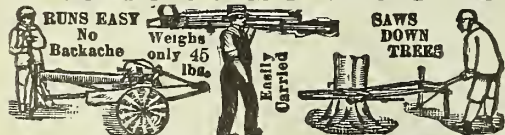
A 14-inch spray of Lambert cherries that weighed 3 pounds. Grown near Salem, Oregon.

A notable cherry crop production this year was taken from the seven-acre orchard of Lambert trees owned by O. E. Brooks, near Salem, Oregon. The orchard, which contains 600 trees, was planted eleven years ago. In 1918 this orchard yielded 13 tons of fruit. The 1919 yield was 11 tons, while this year the yield is said to have been near the 40-ton mark.

The soil on which it is located is the typical red hill soil of the Salem district, and, according to S. H. Van Trump, county fruit inspector, appears to be at the proper elevation for maximum production. The spray of cherries shown in the accompanying picture, which was typical of many in the orchard, measured 14 inches and weighed three pounds.

With the exception of two years ago, when Mr. Brooks lost a portion of his crop by the cherry maggot, the orchard has been a big producer. By spraying at the proper season now he has been able to control the maggot thoroughly.

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WHEN WRITING ADVERTISERS MENTION BETTER FRUIT

Allowing Apple Orchards to Overbear

BELOW will be found an illustration of an abundant yield of apples. To the uninformed observer a yield of this kind no doubt causes amazement and visions of a fortune in the orchard business. Or to the orchardist, who is willing to disregard the future welfare of his trees for the profits of the present, a glance at this picture will probably cause delight.

tality necessary to make the proper wood growth and to develop into a sturdy and long-lived even-bearing orchards.

Condition your orchard by pruning and thinning, to bear a normal rather than an abnormal yield of fruit and you will avoid many of the ills that come from devitalized trees, small fruit as the orchard grows older, and a tendency toward off-bearing years.



A soft spot for the fruit picker, but not good orchard practice.

The fact is, however, that fully one-half of the apples here shown should have been thinned out, notwithstanding the fact that they are of large size and well developed, for no orchard allowed to continue to bear in this way will survive the test of time. The trees will be robbed of the vi-

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PAINTS ~ VARNISHES ~ COLORS ~ INSECTICIDES

Red Spider in Prune Orchards and Methods of Control

By W. H. Wicks, Director of Plant Industry, Idaho State Department of Agriculture

THE attention of fruit growers is again called to the fact that there are two species of Red Spider, common throughout the state, which are found in more or less numbers on various kinds of fruit trees, small fruit, gardens, and other forms of vegetation. Some prune orchards in southern Idaho are at present being severely damaged. The species which is doing the most damage is the true Red Spider (*Tetranychus bimaculatus*) and the other species commonly found is known as the Brown, or clover, Mite (*Bryobia pratensis*). The Red Spider spins a web and winters as an adult, while the Brown Mite does not spin a web and winters in the egg stage.

Some prune orchards in the Payette district are so severely damaged at the present time by the Red Spider that practically all the leaves and fruit have fallen, causing an entire loss of this year's crop. This condition also devitalizes the tree for the future. There are all degrees of injury apparent from an occasional limb, just beginning to show, to an occasional tree seriously affected in an orchard otherwise in full vigor. In some orchards only one or two rows are decidedly discolored and showing the gradual spread of the damage. Many orchards are showing no apparent damage.

At Lewiston last year, apple orchards were injured by the mites and apple growers as well as prune growers should be constantly on the watch for the presence of these pests and control them by spraying before the damage is done.

Nature of Injury.

The first symptom, usually, of the presence of the Red Spider in an orchard is the discoloration of the foliage, which loses its vigorous, healthy, green color and begins to turn a light dusty to brown color. In many cases the leaves begin to curl, but often curling leaves on individual limbs, or the entire tree, curl from other causes. Upon close examination, preferably with a magnifying glass, small, finely spun webs are readily detected which are present on the foliage and twigs and collect dust which soon causes the tree to appear heavily covered with road dust. In these webs the Red Spider exists, but does not confine itself to the protection of the web constantly, as it works about freely over the fruit, foliage and branches in feeding. Its effect on the foliage is such as to completely defoliate a prune tree during one season and causes the prunes to shrivel, loosen from the stem and drop to the ground.

Due to the fact that these mites develop rapidly and do serious damage to the prune and apple orchards when conditions are favorable, the fruit

growers should prepare to control them during the summer when the mites appear and before damage is done.

When to Apply Spray.

Tests made by growers of the Payette district, State Experiment Station and State Department of Agriculture show for this year that these insects have been controlled by applying the spray as late as August 5th, but the best way to be sure of the correct time is to examine the orchard at least twice a week for the presence of the insects and apply the spray before they have an opportunity to cause damage to the trees and fruit. A spray applied this season from June 15th to July 15th, and even as late as the first week in August, would have given sufficient control of the Red Spider in those orchards which are now suffering severely. It is highly important that growers acquaint themselves with this insect and plan to combat it whenever its ravages are apparent.

Spray Material.

Efficient control of the Red Spider can be secured by the use of one of the following solutions, if applied at the right time and used thoroughly:

Lime sulphur, 33° Baume.....	6 gallons
Flour, made into paste.....	8 pounds
Water	194 gallons
or	
Powdered sulphur	40 pounds
Soap	5 pounds
Water	200 gallons
or	
Lime sulphur, 30° Baume.....	4½ gallons
Water	200 gallons

The first formula has given success in California and other states, and Mr. Longley, Idaho Experiment Sta-

tion, found the second formula efficient. The last formula has been used successfully by some growers in the Payette section.

Other Injuries.

In ascertaining the presence and damage of the Red Spider, growers should bear in mind various other blemishes and defects of the fruit and tree which are not caused by these mites. The blue, waterlogged areas of the prune, the issuing of gum, and the brown tissue in the flesh, which is commonly noticed in the prune, is due to a temperature and moisture factor and is associated closely with the vitality and vigor of the tree.

Devitalized trees may be often due to a number of cultural and environmental factors and any cause which will devitalize trees must be ascertained and corrected insofar as possible by the grower. In the matter of damage by unusual temperatures the grower is usually helpless, but problems of the soil, fertility, irrigation, cultivation, insect and disease control, and pruning are controllable factors.

Number of Trees Per Acre.

There are 43,560 square feet in an acre of ground. If the trees are set square and planted 20 feet apart there will be 108 trees to the acre. If 30 feet apart, 48 trees to the acre; 40 feet apart, 27 trees to the acre, and when 50 feet apart, which is the usual planting for walnuts, there will be 17 trees to the acre.

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Kind of Fruit Grown _____
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Timely Notes on Oregon Nut Growing

By Knights Percy, Salem, Oregon

THE interest in filbert planting continues to increase in Oregon. Plantings are going in as rapidly as nursery stock can be had, in spite of the extreme prices asked for the trees, which run as high as 65c, 85c and \$1.15 each (for Barcelona, DuChilly and Daviana, respectively). One grower alone planted 3000 trees in the fall of 1919.

The writer, in company with Murray Wade, editor of the Oregon Magazine, recently made a visit to the grove of the veteran grower, George Dorris, of Springfield. Dorris has the oldest commercial planting of filberts in the Northwest, having some 1200 trees ranging in age from fifteen years downward. His grove is planted in a wonderful type of river bottom soil, fertile and retentive of moisture.

Dorris figures that his crop is about normal in size, which means that the nuts are hanging on the trees very much like hops on the hop vines. He expected his harvest to commence about the 20th of September.

The Oregon Agricultural College is doing some very interesting experimental work in the Dorris plantings. It has been well known among the growers for several years that certain of our varieties of filberts are self sterile, that they will not set fruit when pollinized with their own pollen. It has also been demonstrated

that while certain varieties appear to cause another variety to set a crop, certain others have no effect in that direction. These observations have been made in the field altogether and heretofore no well controlled and well planned work has been done to find which of the varieties are self fertile and which are self sterile and to determine which of the varieties are effective in causing a set of fruit on the various self-sterile varieties.

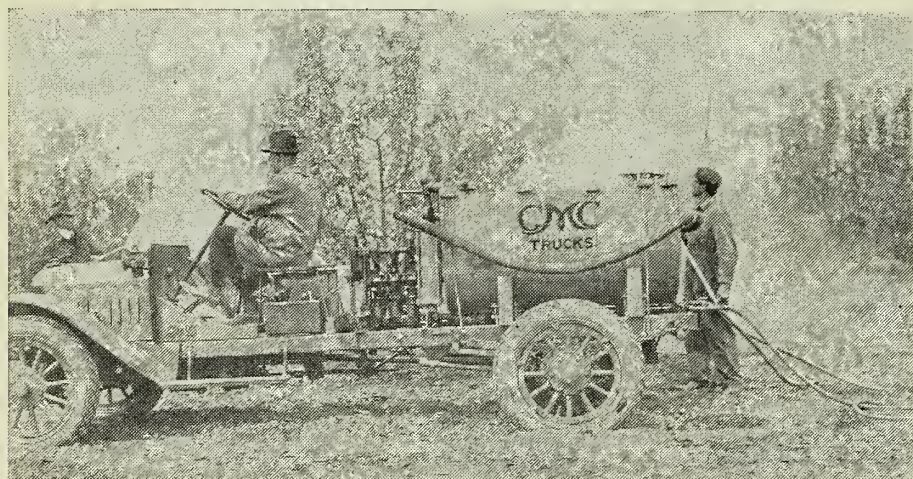
Field observation, for instance, has shown that DuChilly has a beneficial affect upon Barcelona and that Daviana is of great value in pollinizing DuChilly, but that Daviana is nearly self sterile and, to date, no variety has been found that will cause it to bear commercially. This variety produces one of the most beautiful nuts of any of the filberts, and it is to be hoped that Prof. Schuster, of the college, will find some variety while conducting his many pollinization experiments that will pollinize this variety.

While field observations are by no means as accurate as controlled pollinization work, still they have their value, especially in a field so lacking in scientific investigation. The Dorris planting is scattered about a 200-acre farm, in small fields, with heavy timber lying between the fields. One planting in which filberts are used as fillers in a walnut grove, is planted to

Barcelona filberts about 11 or 12 years old. In this field are two or three White Avelines. The White Avelines never bear a crop worth harvesting, indicating that Barcelona has little or no pollenizing affect upon that variety. The Barcelona trees closest to the Aveline are bearing a fairly good crop, while the farther away from the latter variety one goes among the Barcelonas the smaller the crop until at some distance there is little more than enough crop to serve to identify the variety. Dorris reports that this has always been the case. This would serve to indicate that Barcelona is partially self-sterile, at least, although many other growers feel that it is more or less self-fertile. These apparently contradictory observations regarding the fertility of Barcelona may be due to the fact that we are applying the name Barcelona to a type of nut rather than to a variety, and careful study of the nuts produced in the various plantings may demonstrate that our growers are including a number of different varieties under the name of Barcelona. The same may be true of others of our so-called varieties. There is bound to be confusion in the nomenclature of any new species of fruit when first introduced into a district, as is the case of the filbert in the Northwest.

Dorris has made some interesting observations regarding the Bud-Mite. He finds that his Barcelona is not affected by it, while the Daviana is af-

Continued on page 24.



GMC Trucks

Orchardists—

W. F. Richardson of Yakima

Says: "Up until last week I thought I knew something about the values of motor trucks. Since I saw your GMC 16 operating a Bean spray pump outfit with capacity load I have entirely changed my ideas of truck efficiency on the farm.

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Scandinavia a Market for Northwest Apples

SCANDINAVIA offers a good although limited market for American apples and prospects for a successful year in this trade are encouraging, according to the Fruit Trade Commissioner of the Canadian Department of Trade and Commerce.

Great Britain, the United States Holland, Switzerland and Canada are the chief sources of the apple supply of Scandinavia. Practically all of the imports from Great Britain, however, must be credited to apples from trans-Atlantic sources, re-exported. The apples received from Germany also include large quantities of re-exports from Hamburg. It is evident, therefore, says the Market Reporter, that American apples comprise a large part of the Scandinavian apple imports.

Owing to the fact that the prices of trans-Atlantic apples in Sweden are too high for ordinary consumption until the cheaper varieties are exhausted, home-grown and Dutch apples hold the market there until after Christmas. Holland and Switzerland have been the chief sources of Sweden's apple supply since 1917, because war conditions curtailed trans-Atlantic shipping. Since the Dutch apple crop is a complete failure this year, the demand should be satisfactory for American apples, both in boxes and in barrels.

As a rule there is only a light demand for imported apples in Denmark before the middle of December, on account of home and Dutch supplies. Owing to the failure of the Dutch crop, however, American apples in all probability will find an early market there this year.

In Norway, the home grown European imports supply the market until November, after which date trans-Atlantic shipments are in demand. The main season for shipping American apples to Norway is from December to March.

Throughout Norway the red varieties command the best prices, Baldwins, Kings, and Ben Davis packed in barrels being special favorites. Practically no demand exists for green or cooking apples. In the box packs, the varieties especially desired are Jonathans, Spitzenbergs, Winesaps and Arkansas Blacks. Rome Beautys are good sellers but are less popular than more highly colored varieties. The Yellow Newtown is not appreciated except when red varieties are unavailable.

The preferences in Sweden are practically the same as those in Norway. Late red apples are especially liked, but there is no demand for yellow or green varieties. The Yellow Newtown, however, is more popular than the Norway.

In Denmark also red apples are preferred, although western Newtowns are in demand. Boxed varieties may be placed in the following order of popularity in Denmark: Delicious and Newtowns; Winesaps; Jonathans, Spitzenbergs, and King Davids; Rome

Beautys and Arkansas Blacks. In addition to red barrel varieties, Golden Russets are appreciated.

A strong preference exists throughout Scandinavia for the western box pack. As business is transacted on a cash basis, it has been found more economical to deal in box apples than in barrel apples, and for this reason it is difficult to interest the trade in the direct handling of the latter.

The preference for box-packed apples is due not only to the fact that they are usually of a superior standard but also to the fact that they may be shipped more safely. They are also more likely to arrive in a satisfactory condition and are better adapted to handling and inland transportation when packed in boxes.

The preferred sizes of box apples in

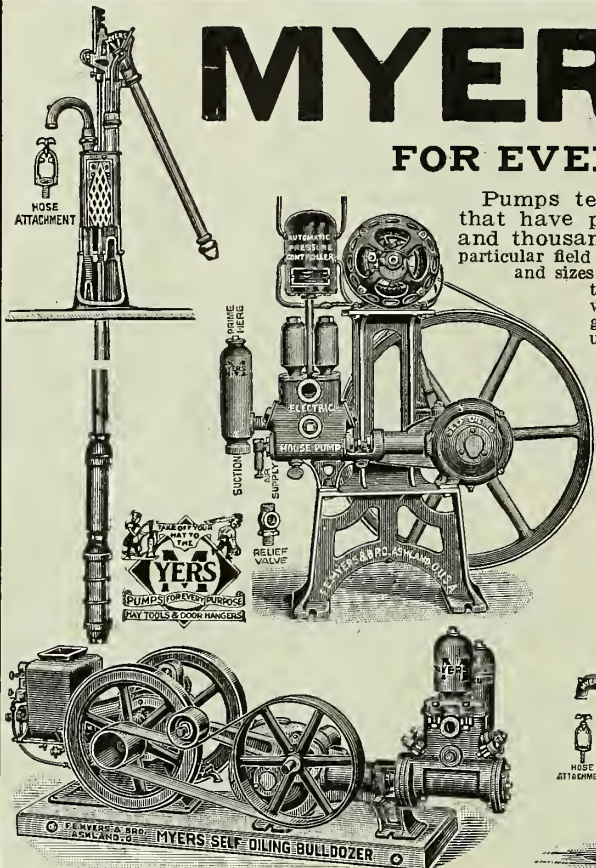
Norway are from 150 to 175 to the standard western box, but there is a good demand for sizes ranging from 188 to 225. Only a small percentage of sizes 125 to 138 can be disposed of, while sizes larger than 125 are difficult to sell.

Although medium-sized box apples are preferred in Sweden as in Norway, there is a greater interest in the direct importation of barrel apples. Many importers will not handle larger sizes than the 138's.

The box pack is the favorite in Denmark, although some varieties are shipped in barrels. The box size desired varies from 150 to 225, but the large sizes are heavily discounted in value.

Several steamship lines run between New York and Norway. The ocean freight rates are 72 cents per cubic

Continued on page 23.



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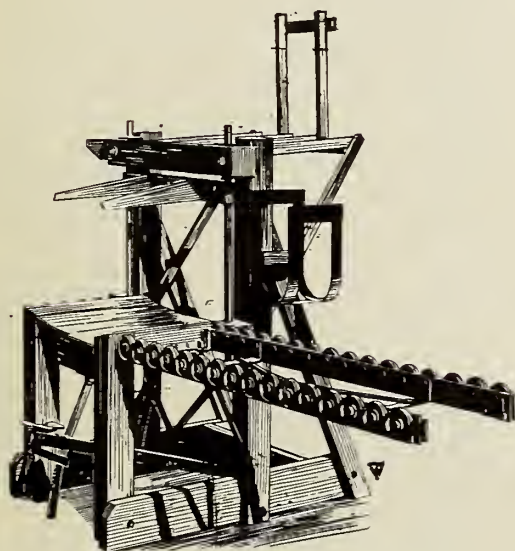
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10-foot ladder weighs 31 pounds
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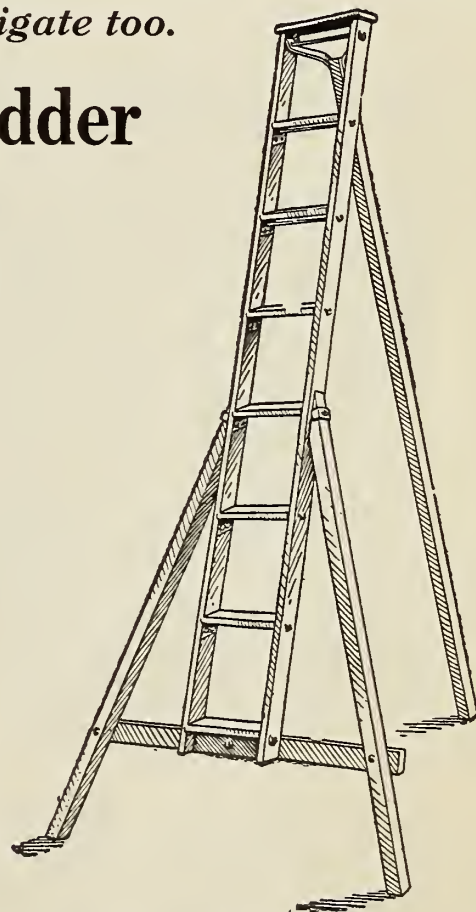
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PORTLAND, OREGON

The Volstead Act.

Fruitgrowers generally should be interested in securing the passage of the Volstead act at the next session of Congress as it is framed to give their marketing associations features that are necessary to make them a co-operative success. It was believed that it would be passed during the past session, but owing to opposition and the short time between its introduction and the adjournment of Congress, was held over. Owing to this fact, several of the large co-operative fruit-marketing associations have found it necessary to change their form of organization this year in order to keep within the law in marketing their crops.

Since Congress has adjourned, if the statements of candidates and politicians are to be believed, there has been a change in sentiment in regard to the Volstead act, and it is stated by those who are carrying on the fight for it that it can be passed if the fruit-growers and fruitgrowers' associations of the country get solidly behind it. Growers, therefore, have both an opportunity and a duty to perform in furthering its passage and should personally take steps to help in pushing it through Congress.

The New Prune Pest.

The depredations of the red spider in Idaho prune orchards, as noted elsewhere in this number in an article by W. H. Wicks, head of the Bureau of Plant Industry of Idaho, should serve as a warning to prune growers in other sections of the Northwest. Up to the present time, the work of this insect in Northwest orchards has been limited and little attention has been paid to it, although it has been a serious pest in the orchards of California for some time.

In Mr. Wick's article, he tells of its habits, the results of its work and methods that his experiments have shown are successful in its control. As a pest of this kind spreads rapidly, prune growers in the Northwest section should watch their orchards carefully and where there is any indication of its appearance, take the necessary measures to eradicate it.

As the Stranger Sees Us.

It frequently takes an outsider to bring to us a new point of view in regard to the possibilities and resources of a district that we have become so familiar with that we disregard them. This, to a large extent, is the case with the article appearing in this issue by W. H. Olin on "Utilizing the Fruit Crop of the Northwest." Having taken a swing around the

country and seen what is being done in developing the fruit industry here in comparison with other sections of the United States that he has been visiting, Mr. Olin becomes enthusiastic and tells us of many things that we are prone to overlook. Even the drawbacks of unfavorable marketing conditions and unseasonable weather are forgotten in reading what he says about the development and the future of the fruit industry in the Northwest, and we are deeply impressed with the conviction that the industry is being stabilized and future avenues made for the output of the fruit products of the Pacific Northwest, fresh and processed, that must mean success. Mr. Olin's article has the punch that stirs to greater activity, particularly when it carries with it the conviction that it is based on facts. The fruit industry of this section is, indeed, assuming huge proportions and bring with it a new and enlarged prosperity.

Increased Freight Rates.

It is announced that the increased rate allowed the railroads on Northwestern box apples is seriously hurting the industry and that unless some relief is afforded, that it cannot survive. This is said to be particularly the case this year, with big crops of apples in the East that are grown much nearer the big markets.

Sales that have taken place on the Coast this year have been on such a narrow margin of returns to the grower that the production cost is said to be eating up the profits. This being the case, it is apparent that some agreement should be reached between the railroads and shippers, whereby there would be a readjustment of the rates. By joint application to the Interstate Commerce Commission this could be accomplished. As a matter of fact, business conditions have very materially changed since the time when the new rates were being considered. Apple prices, like other commodities, have taken a decided drop, and in asking for a re-hearing, this feature should have considerable weight outside of the fact that any railroad tariff that jeopardizes the life of an industry is not sound business practice, for eventually the carrier will suffer as much as the shipper.

What Papers Interested in Fruit Are Saying

According to Etrelbert Johnson, Technical Assistant of the California Department, Department of Agriculture, in an article in the Department Bulletin the puncture vine, a peculiar form of veb vegetation which punctures bicycle and automobile tires is the latest pest that California has to contend with. A peculiar form of vegetation which punctures bicycle and automobile tires is the latest pest that California has to contend with.

The earliest report of the puncture vine in California was in 1903, when it was found growing along a railway bank at Port Los Angeles. In 1908 it was found in abundance in the Southern Pacific yards at Colton, and was also collected near San Bernardino. In 1912 it was reported as a troublesome weed in the vicinity of Bakersfield. It has now spread over a large area in the upper San Joaquin valley and is found in a nearly unbroken line along the railroads northward to San Joaquin county. In the Sacramento Valley, it has been found at Woodland, Durham

and Marysville, and is reported as widely spread along the railroads in Tehama county.

South of Tehachapi, the puncture vine is found from the Mexican border through the Imperial and Coachella valleys to the coastward valleys of Riverside, San Bernardino, Los Angeles and Orange counties.

From the rapidity of its spread in the upper San Joaquin Valley in the last ten years, it is to be expected that the pest will continue to extend its limits from these newer centers of infestation until something is done to check it.

The plant produces numerous prostrate stems which frequently grow to a length of eight feet. At every joint is produced a number of burs, usually five, which separate as soon as they mature. Each bur possesses two or more sharp spines about the size of carpet tacks, so disposed that however the bur may fall, one spine will always point upward. These spines will pierce an automobile tire the tread of which is somewhat worn, and will readily puncture a bicycle tire.

We have almost reached the crisis in the wage scale, and any increase in the wages for employes outside of the farming districts will certainly cause a re-action which will tend to make the situation worse. Up and up we have moved the wage-scale, until the dollar has little value, but a bushel of potatoes or other food is a highly prized article. Every time wages go up it can only have a tendency to make food more scarce and higher in price. The workingman, though earnest in his theory that what he needs to solve his problems is a higher wage scale is laboring under a delusion. The remedy does not lie in an advance but in a reduction in the scale. If we would begin to lower wages along with the prices for the necessities of life, we should soon see the value of a dollar begin to increase in worth, and soon a dollar would be worth a dollar.—Southern Fruitgrower.

Modern Farming says: "No intelligent person will deny that our present system of distribution of farm products is faulty. The solution, however, does not lie in the elimination of the crooked, inefficient middleman, and the proper regulation and protection of those remaining. The honest middleman will not oppose legitimate regulation; he considers it highly advantageous to him by increasing the confidence of his shippers, and by raising the plane of the commission business."

Interest is still keen in watching the development of the Leonard Coates 14-18 prune. On the invitation of Ronald H. Coates a goodly number of prominent horticulturists gathered at the home and orchard of Mr. Coates August 27th to inspect this specimen of improved French prune. Its designation "14-18" means the years during which Mr. Coates was developing it from graft to bearing trees. The particular orchard under inspection at the present is ten acres of peach trees top-worked to this and some other varieties of prunes. The 14-18 certainly makes a very attractive showing in the orchard. The trees were evenly and well loaded with fruit that ran evenly in size close around 30's. It was smooth, clean, regular, with flesh of fine texture. In the opinion of those present it is by far the best specimen of improved French prune yet found in the search for the ideal. To be conservative we must say it is still too early in its testing to be sure of all of its qualities. Experts in breeding stock or trees know that early in the evolution of any strain there is a liability of individuals to revert back to early type. That only after a number of generations can such unreliable individuals be eliminated.—Sunset Standard.

A Correction.

Editor of Better Fruit, Portland, Ore.:

Dear Sir:

I have just read the September number of Better Fruit. On page 12, under the heading "Combatting Fire Blight" you have made a serious mistake. You state "The wounds should be disinfected with one grain of cyanide of mercury and one gram of bicloride of mercury to 500cc of water. This combination is an effective disinfectant for both wounds and tools, according to Prof. F. C. Reimer"

This should read one gram of cyanide of mercury instead of one grain.

I would appreciate it if you would correct this in your next issue. With kindest regards, I am

Very sincerely yours,

F. C. REIMER.

The Refrigerator Car Shortage Problem

IN discussing the car shortage situation that usually obtains during the apple shipping season, a well-known railroad man says:

"The railroads, like the fruit growers, have their problems, and an exchange of information and ideas that will create a better understanding and a closer co-operation between the grower and shipper on the one hand and the railroads on the other is essential.

"Apples are a seasonal commodity, and every fall the railroads are confronted with an enormous volume of apples to move in the shortest possible time. This movement comes also at the same time as the wheat and hay and lumber traffic. If there were no apples to ship at all, the usual fall rush of other principal farm and forest products would give the railroads a goodly amount of tonnage to handle. Such non-perishable products as wheat and lumber and shingles move every month in the year and, while the offerings are larger in the fall, the movement is steadier and longer, and there are no losses to be feared on account of weather or not getting into eastern markets quickly.

"If the apple movement was an all-year-round affair, there would be sufficient refrigerator cars in the country to handle it, but it is compressed chiefly within a ninety-day period.

"For three months of the year, Au-

gust, September and October, the equipment about balances the offerings; then for November, December and January the offerings are in excess of available cars. The split might be several weeks earlier or later, according to conditions which fluctuate some years. Then for the balance of the year a large part of the refrigerator cars are not in use.

"Along in July the railroads begin to head their refrigerator equipment toward the points where it will be needed in the fall.

"These empty refrigerators are accumulated and stored in yards and at stations against the time when they will be needed.

"The railroads go into the season with as large a surplus of refrigerators as it is possible to accumulate, and supplement it with all other refrigerators that can be rounded up and worked westward during the shipping season. The empty car mileage on refrigerators is naturally heavier than on box cars.

"Considering their limited use and idle time, the greater initial cost and interest on investment, and the greater empty car mileage, the carriers would not be justified in attempting to own as many refrigerator cars as would be equal to the size of the crop to be moved.

"During federal control of the railroads, refrigerator cars were pooled

and used in any part of the country where most needed. When the railroads get their tangled car situation finally straightened out this would seem a desirable and necessary arrangement to continue if possible. All of the refrigerator cars in the country would then be available in the Northwest to draw from to move the apple crop. At other seasons they would be available in the south and southwest, or at other points where needed.

"It would require an unreasonable amount of capital to be tied up in equipment that would be idle the greater part of the year, if every railroad acquired sufficient cars of its own to move its crop."

Spraying For Anthracnose.

Spraying for anthracnose on apple trees should be done just as soon as the apples are picked and before the fall rains commence. While you may be fairly satisfied that your trees are free of this disease at the present time it must be remembered that when the rains come it germinates rapidly and may become widespread in your orchard if you neglect preventive measures. A thorough spraying of Bordeaux mixture at a strength of 6-6-50 before the rains permit the spores to develop is the best treatment for destroying anthracnose in your orchard.

Standard of the World—Hoover Potato Diggers

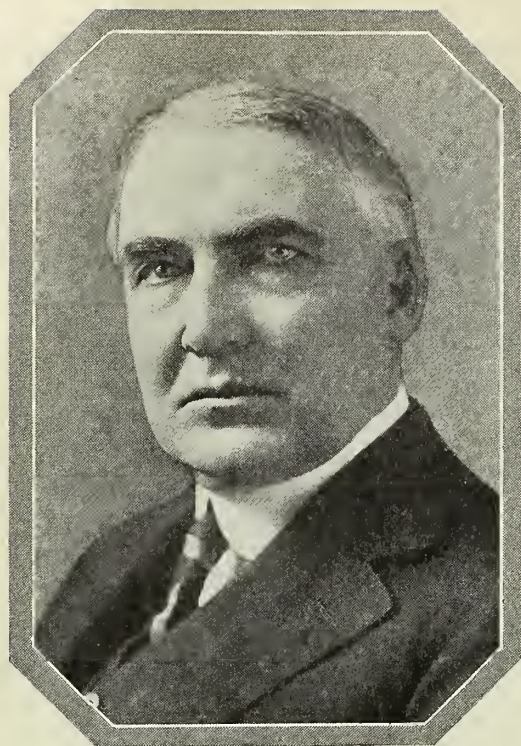


Roller Bearings, Tempered Steel Elevator, Steel Sprockets and Steel Sprocket Chains, Frames and Beams made of Bessemer Steel and Charcoal Malleable Castings. Double Action Tongue Truck.

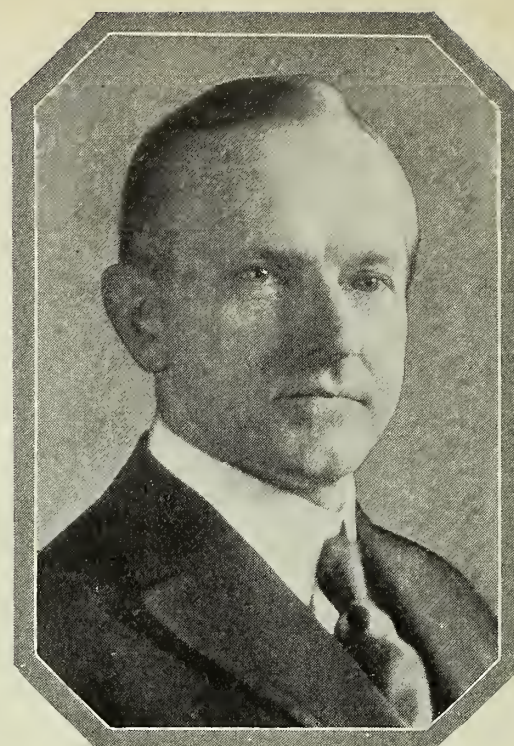
Fill out coupon and we will send you catalog and tell you more about this digger.

John Deere Plow Company, Portland, Oregon
Spokane, Seattle, Boise

Name
Town
State
I have
acres of potatoes.



For President
WARREN G. HARDING



For Vice-President
CALVIN COOLIDGE

A Square Deal for the farmer

If the farmers of the United States think they have nothing at stake in this election—if they think it is simply a contest between the political “ins” and “outs” and that it makes no particular difference to the farmer which wins—they are making a very great mistake, and are likely to realize it when too late to help themselves.

In some matters of interest to the farmers the two parties agree.

For example, both favor strengthening the rural credits statutes; both recognize the right of farmers to form co-operative associations for the marketing of their crops; both favor extending our foreign markets; both are pledged to the study of the cost of producing farm crops.

Now, the matters mentioned are important, but not nearly so important as certain other matters; and in the way they look at these tremendously more important matter we find a radical difference between the Republican and the Democratic parties.

The difference is so vital that if the farmers of the country once understand it, there will be not the slightest doubt as to which party they will support at the polls in November.

The farm voice in government

The Republican party in its national platform is committed to “practical and adequate farm representation in the appointment of governmental officials and commissions.”

Are not farmers entitled to such representation? The Republican party thinks they are.

Under Republican rule, for sixteen years that sturdy and faithful Iowa farmer, “Tama Jim” Wilson, was at the head of the great Department of Agriculture.

What happened when the Democrats came into power?

Why, they turned out “Tama Jim” and put in a university professor who knew nothing about agriculture and gave no evidence of caring anything about it.

Farm interests are vitally affected by the administration of the Federal Reserve banking system, by the Farm Loan system, etc. Should not thoroughly competent men who understand the farmers’ needs and who have a sympathetic interest in agriculture be on these boards?

The Republican party thinks they should and says so. The Democrats were asked to include a similar pledge in their platform, but they refused. Why?

Price fixing and price drives

Both parties were asked to promise to put an end to price-fixing on farm products and to government drives to beat down prices of farm products.

The Democrats refused to make such a pledge. The Republicans agreed and in their national platform are pledged to “put an end to unnecessary price-fixing and ill-considered efforts arbitrarily to reduce prices of farm products which invariably result to the disadvantage both of producer and consumer.”

Do you remember what happened when we got in the war? Do you remember President Wilson’s definition of a “just price”? He said:

“By a just price I mean a price which will sustain the industries concerned in a high state of efficiency, provide a living for those who conduct them, enable them to pay good wages, and make possible the expansion of their enterprises,” etc.

And then do you remember what happened? Government contracts of all kinds were let on a cost-plus basis. That is, the manufacturer was allowed to figure all of the cost of every kind which he incurred (and he was not restricted in his expense) and in addition was allowed

(Continued on next page.)

A Square Deal for the Farmer

(Continued from the preceding page)

Government drives against farm prices

to figure a handsome percentage on top of all his expense and fix his price to cover everything.

Was the farmer allowed that "just price" which was granted so freely to others? He was not.

Prices on some of his products were absolutely fixed, and without investigation of the cost of production.

One prominent member of the Democratic administration when asked about the cost of production of farm crops is reported to have said that this was no time to investigate farm costs of production; that it was the farmer's business to produce and not bother his head about the cost.

Throughout the war the farmer was frantically urged to produce by one crowd, while another crowd was using every device of market manipulation to hold down prices of farm products. Was that fair?

But, someone will say, we were in war, and the farmer should not complain about what it was necessary to do, even if they didn't do it to others.

Very well. Let us overlook what happened during the war. Let us wipe the slate clean up to the signing of the armistice. Let us consider what has happened to the farmer since the war ended.

The farmer had been urged to produce to the limit and had been assured that even if peace came, all he could grow would sell at profitable prices.

Do you remember the price drive in January, 1919, within three months after the armistice had been signed?

Do you remember the more determined drive in July, 1919, when hogs dropped

from \$22.10 on July 15 to \$14.50 on October 15, although pork products to the consumer dropped on an average less than 10%? In June, 1920, hogs were selling at \$5.50 less per hundred than in June, 1919, but retail ham prices were \$3.00 per hundred higher.

As a result of the government drive the producer received less and the consumer paid more. Who benefited?

And do you remember the government drive of the last three months, and what it has done to the prices of grains and livestock?

Within two months the prospective value of the 1920 corn crop decreased three-fourths of a billion dollars. Great advertisements announced that the government proposed to cut down the cost of living by dumping on the market the millions of pounds of government surplus meat at bargain prices.

Have you been making so much money on your cattle and hogs that you can afford further reductions in prices?

In July, 1919, No. 2 corn sold in Chicago for \$2.19 per bushel; in July, 1920, for \$1.56, a decrease of 29%. In July, 1919, steers sold in Chicago for \$15.60; in July, 1920, for \$15.00, a decrease of 4%. In July, 1919, hogs sold in Chicago for \$21.85; in July, 1920, for \$14.85, a decrease of 33%. The decrease in wool prices was 25%. In beating down prices of these products did the government help the consumer?

According to the United States Bureau of Labor Statistics, the consumer paid 24.1% more for his food articles in July, 1920, than in July, 1919. He paid 12.4% more for his clothing; 47.4% more for his fuel and lighting. During the same time, metals and metal products increased 20.9%, lumber and building material 79%, house furnishing goods 47.8%. But ac-

cording to the same authority all farm products had decreased over 4% in July, 1920, as compared with July, 1919.

We shall not deal further with this sickening story of incompetent and inefficient government meddling. You know the story in most of its details.

As you think it over, remember this one outstanding fact: That the Democratic party, if continued in power, is committed to the same sort of a policy in dealing with the farmer and stockman that it has followed during the past two years. It was asked to promise to stop officious meddling which benefits only the speculator and the profiteer, but it refused to make such a promise.

In justice to themselves and their families and the generations to come after them, the farmers of the United States should put in power the Republican party, which realizes its obligations to them and to all other classes of citizens, and which further realizes that if the farmer is not given a square deal, our agriculture is going to be wrecked.

Talk to your neighbors about these things and make sure that they understand what a vital interest the farmer has in the presidential election November 2.

Republican National Committee

Republican National Committee,
Auditorium Hotel, Chicago, Ill.

Please send me, free and postpaid,
copy of Senator Harding's Address
on the present day problems of the
farmer.

Name

Address

The Importance of Wiping Fruit

Where fruit growers late in the season have sprayed fruit so heavily as to leave a residue on it, the United States Department of Agriculture is again urging them to remove the coating by wiping or other means that will make the fruit acceptable in the market. One method recommended for apples and pears, which can be followed at a cost of a few cents per box, is to wipe the fruit with cotton gloves. It is pointed out that if heavy rain-falls do not occur after heavy late sprayings the coating that remains may disfigure it sufficiently to arouse apprehension in the minds of the consumers, even though the residue may be entirely harmless. In some cases, however, heavy late spraying has been sufficient to be actually injurious and so subjects such fruit to seizure under State or Federal food and drug laws.

Where apples and pears when harvested show evidence of spray residues which have not been removed in picking, handling, grading and packing, it is recommended that such fruits be systematically wiped before being placed on the market or packed for shipment. While this precaution is

applicable to all fruit sprayed late in the season, it is especially important in the more southern apple districts where the grower is often compelled to spray late to protect the fruit against bitter rot, and in irrigated orchards of the West and Northwest where protection of apples and pears against the later broods of the codling moth is secured by spraying with arsenate of lead.

While at this season the Department's specialists are laying emphasis on the importance of wiping fruit that has a residue from spraying, they also take occasion to urge that no grower should suppose fruit injury resulting from neglect of proper spraying early in the season can be corrected by belated spraying. Heavy late spraying undertaken in an effort to make up for what should have been done earlier is strongly condemned.

The practice of spraying growing fruit properly marks one of the most important steps in horticultural progress and is responsible, to a large extent, for the sound, attractive appearance of fruit now on the market, which is in marked contrast to the insect-injured and disease-spotted fruit so prevalent a few years ago.

Why Better Fruit Helps

Just as important as adequate tools for use in your orchard is a comprehensive knowledge of the principles behind their use.

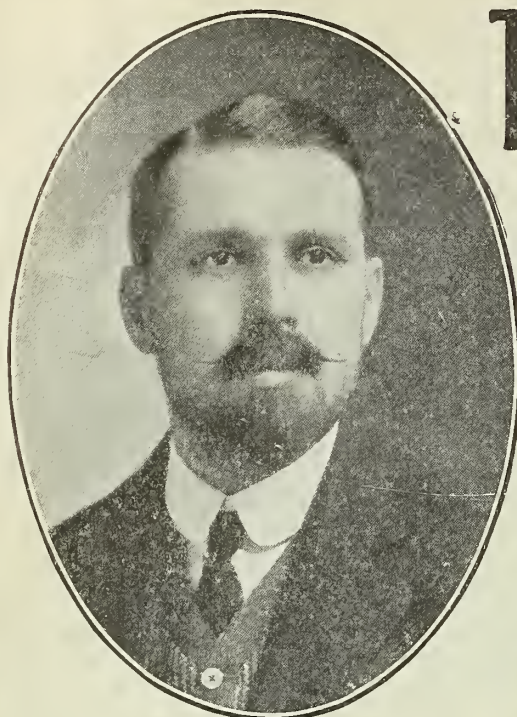
A strong back and a weak head may make for success in some lines of work, but not in the business of commercial fruit growing as it is practiced today.

Give me rather a cripple in a wheeled chair who knows *why* than the muscle-bound giant who works so hard he has no time to read and study.

Better Fruit gives you just the information you want at the time you need it.

Each issue of Better Fruit is crammed from cover to cover with seasonable information and interesting news notes pertaining to your business.

You should read it, for it is instructive and helpful to you as a fruit grower.



T. J. POUPART

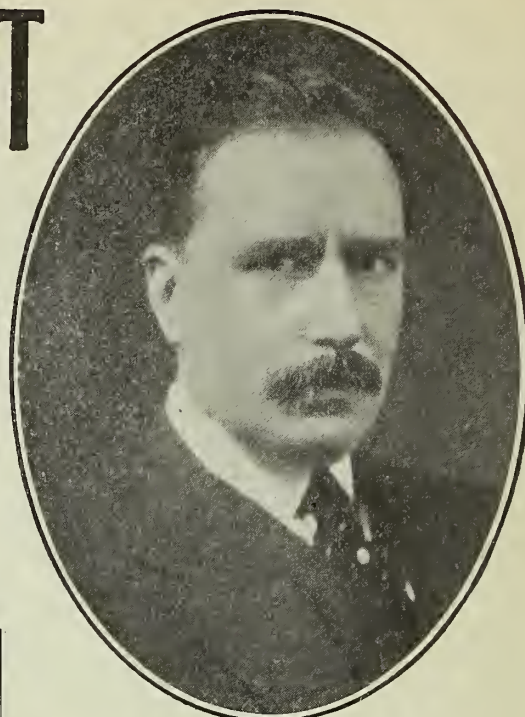
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COVENT GARDEN

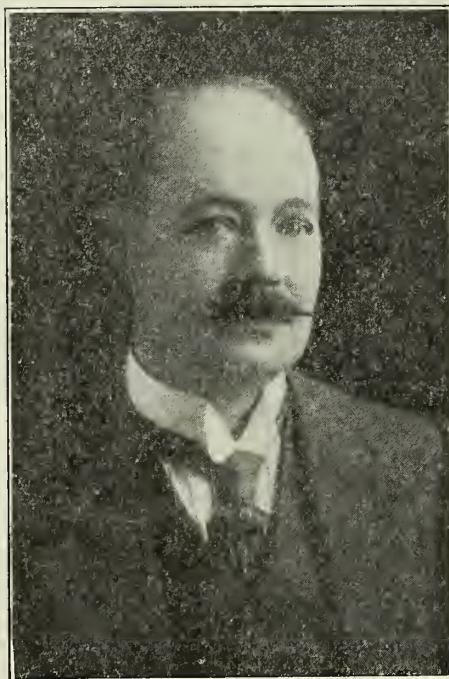
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The Largest Firm
of Fruit Salesmen
in Great Britain

(Established Over a Quarter of a Century)



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SAM BIRCH

T. J. P. Representative Now in America

CABLES:
POUPART,
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CODES:
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MARCONI
International

We have a reputation of twenty-five years' service to be upheld and to uphold us. We handle fruit on consignment only. We NEVER buy lots of our own to interfere with or take preference over consigned shipments, hence our best efforts are always devoted to procuring the highest prices for the consignor.

We solicit your consignments and our Mr. Birch will be in this country every fall to arrange for shipments. Our business necessitates, in addition to shops and stands in the most central position of Covent Garden Market, twelve great warehouses, with a floor space of between five and six acres. Through these warehouses in the course of a year there passes an average of three million packages.

We have world-wide connections.

No part of the world where fruit is grown and exported escapes our notice. In addition to the hundreds of places in the British Isles from whence our supplies are derived, we import fruit from America, Canada, Australia, Tasmania, South Africa, Spain, Canary Islands, Azores, Portugal, France, Italy, Belgium and Holland. We are now directing particular attention to offering American and Canadian growers the great POUPART service. We make advances to cover freight and accessory charges.

All communications should be addressed to

MR. SAM BIRCH
HEADQUARTERS, KALAMALKA HOTEL
VERNON, B. C.

Experiments with Pickering Bordeaux Spray

EFFORTS to obtain a copper fungicidal spray for fruits and vegetables that would be as efficient as but less expensive than standard Bordeaux mixtures, have led to encouraging experiments with the Pickering Bordeaux sprays, the results of which are contained in a bulletin now issued by the United States Department of Agriculture. The high price of copper sulphate, known as bluestone or blue vitrol, during the war caused chemists of the department to turn their attention to the Pickering Bordeaux sprays, which contain less of this high-priced chemical.

The so-called Pickering Bordeaux sprays had been tested to a limited extent in England, where laboratory tests indicated that they were more efficient per unit of copper than the Bordeaux sprays. Pickering sprays, sometimes called Pickering limewater sprays, are prepared by mixing saturated limewater with diluted solutions of copper sulphate, and contain their copper in the form of basic copper sulphates. If the results obtained by Pickering, the British chemist, from whom the sprays get their name, in the laboratory in England hold true under field conditions in America, it is obvious that a great saving in copper in this country may be effected.

It is believed that the experiments by the department lay a basis for further studies to be conducted in various parts of the country. The opinion is expressed that from the information provided in the bulletin the various agricultural experiment stations and other agencies in the country will be able to devise formulas for copper fungicidal sprays for certain crops made with less copper sulphate than standard Bordeaux, which will prove just as efficient as the more expensive sprays. It would be impracticable, it is pointed out, for the department to devise these formulas itself. Field conditions vary in different sections of the country, and experiments would have to be conducted in these different sections in order to work out a spray suitable to local needs.

Tests Cover Three Seasons.

The experiments, which covered three seasons, were conducted with Pickering Bordeaux sprays containing the equivalent of from .06 to .7 per cent of copper sulphate. Their efficiency was compared with that of standard Bordeaux mixtures containing the equivalent of from .75 to 1.25 per cent of copper sulphate.

The results of the tests made on potatoes in Maine indicated that, per unit of copper present, the Pickering Bordeaux sprays were twice as effective as the standard Bordeaux mixture. The strongest Pickering Bordeaux sprays, containing the equivalent of from .6 to .7 per cent of copper sulphate, controlled late blight on potatoes and the fungous rots of cranberries in New Jersey very effectively.

Their control of certain fungous diseases on grapes and apples was not definitely determined, the results being complicated by burning or other injury to the foliage and fruit. Pickering sprays containing less than the equivalent of .6 per cent of copper sulphate were not effective as fungicides for potatoes and probably not for cranberries.

Increased yields of tubers were obtained on plats of potatoes treated with standard Bordeaux and with the stronger Pickering sprays, indicating that the latter sprays exerted similar stimulating and protective action on the plants. The adhesive properties of Pickering Bordeaux sprays varied

with the foliage to which they were applied. They adhered to potato and cranberry leaves in practically the same degree as the standard Bordeaux, to apple leaves in a somewhat higher proportion, and to grape leaves in a lower proportion.

No Harm to Maine Potatoes.

No injurious effects followed the application of Pickering Bordeaux sprays to potatoes in Maine or to cranberries in New Jersey. The sprays, however, proved to be too caustic for use on apples in Virginia or on grapes in New Jersey and Virginia. Pickering Bordeaux sprays, it is said, can not be used on tender foliage.

Barium-water sprays of the Pickering type, made with barium hydrate instead of lime and containing the

[This is one of a series]

Rest

If you were a tree,
After a big crop and long summer,
You would want a rest,
A rest from growth and insects.
Give your trees an early bath with

ZENO

It will kill the various scale,—stop their damage,
Destroy the eggs of red spider and aphids,
Which would later mean millions of insects, and
Destruction to the crop—harm to the trees.

ZENO

Is an internationally used
Miscible oil spray, and these are reasons why
It has proved the best by years of test.

MANUFACTURED ONLY BY

Eastbay Chemical Co., Inc.
of Emeryville, California

[Zeno may be had of your local Distributor, Fruit Company
Exchange, or by writing to us direct]

SPOHN & WING, Northwest Agents
223 Sherlock Building, PORTLAND, OREGON

ATTENTION!

Boys and Girls

I want to hear from every boy and girl who would be willing to devote just about one hour's spare time. I will reward them for their services with choice of the following articles:

- Premo Cameras
- Raincapas
- Rain Hats
- Flashlights
- Beautiful pencil boxes with assortment of pencils and pens
- Fancy stationery, and many other beautiful articles.

And for those who would like to start in the Poultry business, I will start them by supplying pure-bred Chickens Free.

For full particulars enter your name and address on the coupon below and tell me what you would like to have. I will tell you how easy it is to get it.

B. MARCUM,
Director of Circulation,
800 Oregonian Bldg., Portland, Oregon.

Please tell me how I can secure.....

..... (name article desired.)

My name is.....

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Winter Nelis Pears
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A SPECIALTY

Home Nursery Co.
RICHLAND, WASH.

The Old Reliable

BELL & CO.

Incorporated

WHOLESALE

Fruit and Produce

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PORTLAND, OREGON

equivalent of .7 per cent of copper sulphate, proved very successful against the late blight of potatoes in Maine. Such a spray containing the equivalent of .6 per cent of copper sulphate was tested one season in Virginia and did not injure the foliage or fruit of the apple trees.

Remedies for Pear Slug.

To destroy the pear and cherry slug, which is said by Prof. A. L. Lovett, entomologist at the Oregon Agricultural College, to be unusually active recently, spray with one pound of arsenate of lead powder to 50 gallons of water. Sulphur, air-slacked lime or wood ashes sifted over the foliage are also said by Mr. Lovett to be good remedies to apply for this pest, which destroys the foliage and is especially destructive to young trees.

Pruning Cane Fruits

By Gordon G. Brown, of the Hood River Experiment Station.

Considerable difference in the management of can fruits has taken place during the past few years. Probably no district has done more to demonstrate different systems than the Pyalup Valley growers. Formerly the policy was to grow raspberries in hills, four to five feet apart. When the new canes were four feet high they were headed so as to throw out laterals. Now, however, they have found it more practical not to prune at all during the growing season but to permit the canes to grow as tall as possible. Where this was done, planting was about three feet apart in the row.

During winter the side shoots are trimmed off, leaving a long whip-

shaped cane. These canes are trained to a wire or permitted to lay over a hop pole. This plan gives a much longer harvesting season since the earliest and consequently the highest-priced berries are borne on the ends of these long canes. It has been estimated that where the grower removes the top of his bush berries he is cutting off at least 25 per cent of the crop and by so doing causes his harvest to ripen at nearly one time instead of over a much longer period.

Care of Nursery Stock

Have someone receive the stock upon its arrival at the postoffice or express office at the other end of the route. Have them heel the trees in a moist, shallow, trench, covering the roots with moist earth and leaving the tops out but shaded from sun or protected from drying winds, and so hold until someone is coming to your place or until you can go in to get them. The trees will thus be protected from drying out and will be in good condition, with such treatment, for a week or so. In carrying them home, keep the roots moist and covered, away from the sun and dry air.

Miscible Oil Demand Increases.

The larger demand for miscible oil as a spray for certain varieties of orchard pests has resulted in the location of the headquarters of distributing agents at available points in the Northwest. One of the latest to establish an agency in this section is the East Bay Chemical Company of California, which has made Spohn & Wing Northwest distributors for their miscible oil spray Zeno. Spohn & Wing have established their headquarters in Portland.

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Write for FREE monthly bulletin. Tells how to spray, pack, ship, how to avoid shipping losses, how to get top market prices. Illustrated.

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The most delicate fruits or vegetables can be shipped in these packages without danger of crushing. Though light in weight they are extremely strong. Use them for peaches, potatoes, apples, grapes, sweet potatoes, plums, etc. Hold standard bushel. Pack right in field. Ship direct to market without repacking. Covers fastened without nails.

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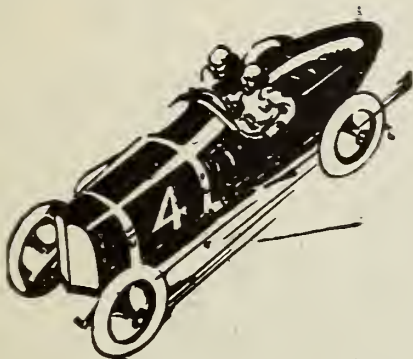
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70 acres bearing apple orchard in one of Eastern Oregon's choicest fruit districts. Trees 10 and 13 years old.

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**STANDARD OIL
COMPANY**
(California)



*A grade for each
type of engine*

Scandinavia a Market for Northwest Apples

Continued from page 14.

foot for boxes and \$1.94 per 100 pounds for barrels. The duty on apples is about 1½ cents per pound.

There are also several good lines connecting this country and Sweden. Regular schedules are maintained between New York, Stockholm and Gothenburg. The ocean rates on apples are \$3.50 per barrel and \$1.40 per box. The duty on apples entering Sweden is somewhat less than 1½ cents per pound.

Boats run from New York to Copenhagen twice and sometimes three times a month. Ocean rates are 70 cents per cubic foot and \$3.25 per barrel. The duty is negligible, being about 6¼ cents per 100 pounds.

There is practically only one way of transacting business in the apple trade between this country and Scandinavia. The actual importers prefer to do business through resident agents on a commission ranging from 3 to 10 per cent, which is arranged for and included in the quoted price.

The resident agents receive cable quotations f. o. b. New York. They present these to a clientele of apple importers and cable the acceptance. The transaction then becomes one between the importers and the shippers on the basis of cash against documents or sight draft attached to bill of lading, and payable before inspection or delivery at the bank in the foreign port. Inspection on behalf of the importer at port of shipment is not usual, though sometimes arranged.

The agents do not handle the cash. The shippers receive the total amount from the importers through the bank and settle with the importers quarterly or as arranged. The duties of the agents are confined to placing orders and to making necessary adjustments, etc.

The main essential to success in business conducted this way is delivery of the goods at the time promised. Failure in this respect offers the only reasonable loophole for rejection. An importer who purchases for the Christmas trade can not be held to his contract for apples that arrive at the end of January.

Many importers obtain their supply of trans-Atlantic apples at the apple auction in Copenhagen, where free port facilities offer special inducements for this business. Sales are held every Monday and Thursday. Although the auction is confined to Copenhagen buyers alone, sales notices are sent out all over Norway, Sweden and Denmark, and outside merchants arrange to purchase through members of the auction.

Soil For Strawberries.

Soil for planting strawberries should be thoroughly prepared before they are planted. Failure in this respect usually means a poor yield as strawberries require abundant humus to

thrive properly. Probably the best results are obtained from growing and turning under a green manure crop although heavy applications of stable manure will greatly aid in supplying the lack of humus. In planting strawberry plants in the fall care should be taken to have the rows well hilled up to prevent the roots from freezing.



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SLOAN'S LINIMENT is an effective counter-irritant that penetrates to the affected part, without rubbing, scatters the congestion, and promotes a warm, comfortable relief. Try it when your "bones ache" and you feel you "can hardly stand up any longer."

For more than 38 years Sloan's Liniment has been used by the families of the nation in quickly relieving rheumatic aches, lumbago, neuralgia, sciatica, lame, sore, strained muscles, bruises and other pains and sprains. Put up in convenient bottles in three sizes—the larger the bottle the greater the economy. 35c., 70c., \$1.40.

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Buy direct from nursery; save your money. Do this by buying from us through our **Mail Order System**. 29 years in business.

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30 x 3½	8.40
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31 x 4	10.20
32 x 4	10.55
33 x 4	11.00
34 x 4	11.35
33 x 4½	12.50
34 x 4½	13.00
35 x 4½	13.25
36 x 4½	14.00
35 x 5	14.50
36 x 5	14.75
37 x 5	14.90

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Notes on Oregon Nut Growing

Continued from page 12.

affected the most seriously of any of his varieties. DuChilly shows some little injury but produces a heavy crop, regardless of this pest.

Dorris was one time the asparagus king of the valley and still ships large lots of this product but is gradually doing away with this product as well

as his peaches and other crops and plans eventually to have his whole farm in filberts. Recently his nephew, a veteran of the great war, has become associated with Mr. Dorris, and between them they are crowding the filbert end of the business to the limit. They are layering thousands of plants each year, being occupied in this work from December until April. They are experimenting with the use of nitrate in this work, but their work has not been conclusive in this direction as yet.

The past winter and spring has been a most trying one on our orchards of all kinds. The temperature went down to 20 degrees below zero (it very seldom drops below zero in this valley) early in December before the trees were completely dormant. Trees of all species were injured more or less, but the filbert came out of it with less injury than almost any other type of tree. In some cases in certain low locations the catkins and at times also the pistillate buds, were frozen above the snow line, as were those of our native hazel in similar locations. A few limbs on the southwest sides of the trees have died since, evidently from the freeze injury, but in many other locations no injury at all was apparent. The Dorris planting, the Forbis planting at Dilley, and many others in the valley are producing heavy crops this season and show no ill effects from the intense cold.

The walnuts in the hill sections are generally in very good condition and are bearing good crops of nuts at the present time. In the valley sections, however, perhaps 50 per cent of the walnuts were frozen to the snow line. Baldwin and Spitzbenburg apples in the same locations were completely killed, and many varieties of peaches were killed to the snow line. In general, however, it was the trees that were unfavorably situated in some manner, having poor drainage or having been poorly tilled or being planted so close that there was not an abundant supply of food and moisture to keep them in good vitality that were most severely injured. Although the vigorous trees showed the most apparent injury just after the freeze, their bark being discolored to a chocolate brown and at times being separated from the body of the tree, still they had the vitality to recover while many of the trees in poorer vitality in the crowded orchards, for example, although showing less apparent injury, failed to recover from the shock.

The big freeze has served to emphasize the fact that while there are thousands of acres of land in the Willamette valley that are favorably located for walnut culture, there are many more thousands that are unsuited for their best growth, and that while the plantings will do fairly well on many of the less favorably located lands, it is those growing upon the well situated sites that have the best chance to survive unfavorable seasons.

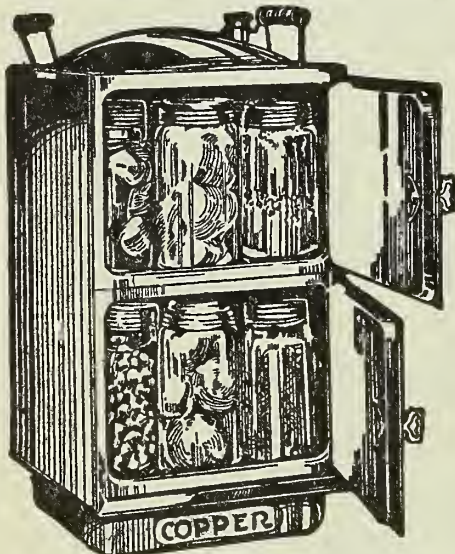
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No. 20—Conservo, 21½ inches high, 11¼ inches square; 4 removable shelves; 2 pans; cooks for 3 to 15 persons; holds 14 one-quart jars for canning. No. 9—Conservo is 13½ inches high; 2 shelves; 1 pan; cooks for 2 or 3 persons; holds 6 one-quart jars for canning.

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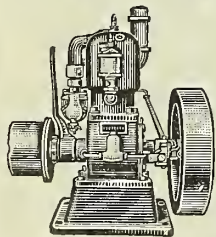
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WE CARRY—AND CAN SHIP IN 24
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SPITZ

140
NEWTOWNS

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NEWTOWNS

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WHEN WRITING ADVERTISERS MENTION BETTER FRUIT

Northwest Fruit Notes From Here and There

OREGON

Reports from the cranberry-growing districts in the Marshfield district are to the effect that the largest crop of these berries will be harvested in that section this year in its history. Help for harvesting the crop it is believed will also be plentiful.

At a recent meeting of the board of directors of the Hood River Apple Growers' Association, E. W. Birge was elected president of the organization to succeed P. S. Davidson, who resigned. O. B. Nye was elected vice-president to succeed A. F. Bickford.

The schedule of prices for prunes recently announced by the Oregon Growers' Co-operative Association, which expects to handle the largest tonnage of Oregon prunes during the present season, is as follows:

30-40's, 15 cents bulk basis, or 18 $\frac{3}{4}$ cents in 25-pound boxes.

40-50's, 13 cents bulk basis, or 16 $\frac{1}{4}$ cents in 25-pound boxes.

50-60's, 11 $\frac{1}{2}$ cents bulk basis, or 14 $\frac{1}{4}$ cents in 25-pound boxes.

60-70's, 10 cents bulk basis, or 12 $\frac{1}{4}$ cents in 25-pound boxes.

70-80's, 9 cents bulk basis, or 10 $\frac{3}{4}$ cents in 25-pound boxes.

80-90's, 8 cents bulk basis, or 9 $\frac{1}{4}$ cents in 25-pound boxes.

90-100's, 7 cents bulk basis, or 7 $\frac{3}{4}$ cents in 25-pound boxes.

Recent estimates of the Hood River apple crop place it at 70 per cent of last year's yield when 2,000,000 boxes were shipped. Growers there are now looking for a 2,000-car crop.

The Western Fruit Company, with a capital stock of \$10,000 and with headquarters at Salem, has been incorporated by F. Howard Zinser, W. J. Spalding and Ariel D. Zinser.

The first car of Rogue River Bartletts of the 1920 crop to reach Chicago sold for \$2,886 gross, or an average of \$5.55 per box. Another car sold for \$2,783 per car, or \$5.28 per box. The above sales are said to break all record for pear sales in car lots from Medford.

A survey of the farm acreage in Marion county for 1920 shows that the fruit acreage has increased very materially recently, when compared with former years. The statistics recently given out in regard to fruit in this

county show 8,552 apple trees in bearing; apple trees, non-bearing, 575; cherry trees, peach trees, bearing, 352; peach trees, non-bearing, 79; pear trees, bearing, 1,051; pear trees, non-bearing, 943; prune trees, bearing, 13,825; prune trees, non-bearing, 6,935; walnut trees, bearing, 257; walnut trees, non-bearing, 1,675; loganberries, 3,446; blackberries and raspberries, 2,940; strawberries, 875; other fruits and nuts, bearing, 250; other fruits and nuts, non-bearing, 204.

According to a report from Roseburg a severe wind storm that visited that section during the middle of September, blew down and injured 35 carloads of apples so badly that they could not be saved for shipment. About 50 per cent of the apples that were ripe at that time, it is declared, were rendered unfit for anything but immediate use. In the Hood River district, late varieties of pears were injured by the windstorm. The apple loss in this district was also considerable.

Oregon bee men are informed by the Oregon Agricultural College at Corvallis that they may now have the help of a trained bee specialist, as H. A. Scullen, a successful commercial bee man, has been employed by the college to take up this work.

The Hood River county fair, which was one of the most successful held in recent years, and had a large attendance, was characterized by a fine exhibit of early apples. In an apple packing contest that was held, "Shorty" McManan, a professional packer, was the winner. He packed two boxes of apples in a little over five minutes. Miss Pearl Nerrill scored second in the contest.

Oregon apples are already on their way to China, having been shipped to the Orient some time ago by Kelley Bros., a Hood River apple-buying firm.

The early fall rains did great damage to the Oregon prune crop, according to a report on the situation made by the Oregonian, which says that, allowing for exaggerations in reports, which are usual when a crop is in danger or injured, prune men nevertheless believe that this year's crop has been cut down one-half. If this is true it will mean a loss of about \$3,000,000 to the prune growers of Oregon.

There were prospects in the spring of a crop of 80,000,000 pounds of dried prunes in the state. The estimate was cut down to 60,000,000 pounds when the June drop came and now the rain damage has reduced the crop probably to 30,000,000 pounds.

Discovery of a hybrid prune, the "New Oregon," which experts declare will revolutionize prune growing in the entire northwest, was announced at a banquet of prominent Oregon nursery men recently, says the Oregonian.

The prune was first discovered about eight years ago in an orchard owned by Andrew Vercler in Polk county. Following a series of careful experiments with a few specimens produced during a period of several years, Mr. Vercler top grafted an entire row across another Polk county orchard, and also a portion of an orchard which he owned near Hayesville. The top grafting came into full bearing last year and the prune, it is stated, has been commercially tested in every way.

The "New Oregon," authorities state, has been tested as to texture, sugar, acidity, content, drying proclivities and carrying quality of the tree, and in each case has been found far superior to anything previously grown in the northwest.

In appearance the new type of fruit would seem to be a cross between the Oregon "Italian" prune, and the Oregon "French" prune. It is larger than either, however, and more tasteful.

WASHINGTON

The Yakima valley pear crop is estimated at about 800 carloads, a large part of which went to the canneries. Prices are reported to have ranged from \$65 to \$90 per ton, the top price being paid for unusually fancy fruit.

The first cars of green prunes shipped from the Walla Walla district this year are reported to have brought around \$50 per ton. The first sales from this district last year were over \$100 a ton. According to an estimate made by District Horticulturist E. G. Wood, the prune crop at Walla Walla was cut down from 50 to 75 cars by the depredations of the red spider.

The Wenatchee World reports the most successful Bartlett pear season in the history of the district. The shipment amounted to about 500 cars at prices from \$65 to \$80 a ton. Late varieties of pears from this district made added shipments of around 200 cars.

After having spent several years as the manager of a large fruit ranch near Wapato, William Jonson announces that he will give up fruit growing to devote his time to the manu-

Food and Beverage

Make no mistake! Nothing can take the place of Ghirardelli's Ground Chocolate—at your table or on your dealer's shelves. Because Ghirardelli's fills a daily household need—and fulfills every essential of food and beverage.

Ask for Ghirardelli's Ground Chocolate at the store where you do your trading. Never sold in bulk but in cans only. In this way Ghirardelli's retains its flavor and strength—the two most important elements of good chocolate.

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GHIRARDELLI'S

Ground Chocolate

facture of a combination spray, which he claims will kill any and all insect pests that infest an orchard. The plant, it is understood, will be located at Wapato.

The second annual prune harvest festival of the Prunarians, an organization which represents in a civic way the large prune-growing activity in Clarke county, was held during the middle of September at Vancouver, and attracted widespread attention on the part of prune men and others interested in fruit in Washington and Oregon. Besides a program of entertainment each day, visits were made to the prune orchards and packing plants and general methods of prune culture informally discussed.

E. M. Seifert, of the United States bureau of markets, has opened offices at 424 Federal building, Spokane, following the decision of the government to close the Portland office and make Spokane the center for reporting apple and potato crop conditions in the North-

west. "From the Spokane office we shall issue a daily report on the apple and potato crop conditions in the four Northwestern states," said Mr. Seifert.

Yakima growers who desired to dispose of windfall apples met with the sudden realization that the cull apple crop, which a year ago brought a revenue of close to \$500,000, will this year be a drug on the market, according to a recent report. No buyers are willing to take windfalls but it is understood that later in the season the cannery will be willing to take some for making apple butter.

A campaign to combat the codling moth and the leaf roller insect in the Spokane valley fruit sections and other parts of Spokane county will be made under the direction of E. J. Kelley, deputy state horticulture inspector for northeastern Washington in the near future. Fruit growers of the sections have met with Mr. Kelley to work out a plan whereby aid will be asked. Several inspectors for

Spokane county alone will be appointed about January 1st if the present plans of the campaign go through.

Yakima shippers, as a result of efforts of the commercial club, have contracted for all refrigerated space aboard the Hamburg-American steamer Kinderdyke, providing water transportation to Europe for 34,000 boxes of apples, or approximately ten carloads. The freight will be \$47,600 or \$1.40 a box from a Puget Sound port through the Panama canal to London, Antwerp or Rotterdam, as consigned. The trip will take 44 days, approximately, but is considered safer as well as being 10 cents a box cheaper than to take the fruit across the continent with the present congestion in New York harbor.

Several cars of mixed varieties of apples have been shipped to Alaska from Hanford in the lower Yakima valley. Several more will be forwarded to Seattle for shipment north.

The Complete Dormant Spray

Controls { Pear Psylla Fire Blight Scale

SCALECIDE controls Pear Psylla, when applied in the Fall, by killing the adults before they lay their eggs. (After they lay their eggs in the Spring it is too late.) Scalecide also controls fire blight by penetrating the diseased tissues and killing the hold-over canker from which fire blight is spread. It is not only a contact insecticide for scale, but has fungicidal and germicidal properties too.

It Invigorates Tree Growth

The invigorating effect of Scalecide is noted in increased terminal growth; larger, darker foliage on bearing trees; and the holding of the foliage later in the Fall, thus accumulating starch and sugar which results in a plumper fruit spur and insures a larger crop the following year. Those who have used Scalecide and lime-sulfur side by side claim that Scalecide gives greater yields of fruit—in one case 58%.

Reduces The Cost Of Labor

Though Scalecide costs more per gallon than lime-sulfur, this is much more than offset by

the saving of material and labor. One barrel of Scalecide, making 800 gallons of spray, will cover, until they drip, as many trees as three and a half barrels of lime-sulfur, which make 1600 gallons of spray. And of course you can apply 800 gallons of Scalecide in much less time than 1600 gallons of lime-sulfur.

A Pleasure To Use It

Scalecide is soothing and antiseptic to the skin; it does not injure even the eyes; it is non-poisonous to man or beast; and being an oil, it makes the pump run easier and does not clog the spray nozzle. *It is a pleasure to use it!*

The Demand Is Heavy

The past year many fruit growers were disappointed because they could not get Scalecide. This year, though we have doubled our factory capacity, we anticipate difficulty in meeting the demand. Order early and avoid disappointment. Write today for our free booklet, guarantee and prices, and give us your dealer's name. Use the coupon below. Address Dep't 25.



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THE COMPLETE DORMANT SPRAY

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"Makes a Tree Outgrow Its Troubles"

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(number) (number) (kind of spray)

My dealer is:.....
(Name) (P.O.) (State)

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CALIFORNIA IRON WORKS

RIVERSIDE, CALIFORNIA

Apple sales in the various districts in Washington as well as the other sections of the Northwest are reported to be slow with very little indications as to prices. A few sales have been reported from the Yakima, Wenatchee and Spokane districts, but the general trend is to hold off until later in the season. A sale reported by the Spokane Valley Growers' Union of 50 cars shows a drop in prices for the same varieties of 25 to 75 cents a box compared with those of last year. The prices quoted for the Spokane sale are \$2.00 to \$2.25 for Jonathans; \$2.25 to \$2.75 for Delicious, and \$2.25 to \$2.50 for fancy Winter Bananas. The following prices for extra fancy grades are reported to have been offered by buyers at Wenatchee: Winter Banana, \$2.75; King David, \$2.15; Jonathan, \$2.00; Delicious, \$2.00. Growers are somewhat disappointed with the prices of Delicious and Jonathan, believing that there is a shortage of both varieties.

The heavy rains during September very materially cut down the output of the prune crop in Clarke county, prune men there estimating that from one-third to one-half of the crop is a loss.

Bits About Fruit, Fruitmen and Fruitgrowers

E. F. Benson, commissioner of agriculture of the state of Washington for several years, recently resigned this position and accepted one as manager of a new department that has been created by the Northwestern Pacific Railroad. The new department will be known as that of immigration and industry, through which the railroad plans to co-operate with federal and state authorities, agricultural colleges, farm bureau organizations, county agents, farmers' clubs and other agencies in promoting enterprises for the Northwest. In making the appointment, President Hannaford of the Northern Pacific stated that Mr. Benson had been selected owing to his experience with agriculture and the railroad business. Mr. Benson accepted the position by cable from Shanghai, China, having been away for several months on a trip to the Orient. He took charge of his new duties October 1st and will have his headquarters at St. Paul.

A visitor in the Northwest at the present time is Mr. Sam Birch, representative of T. J. Poupart, one of the largest handlers of fruit and produce in London, England. The mission of Mr. Birch in the United States is to secure shipments of American apples. Mr. Birch, who has been touring Washington, Oregon and California, believes that notwithstanding the price control in England that the fancy and choice grades of Northwestern box apples will bring the grower better returns in England than in this country and is endeavoring to make connections for large shipments of these grades, particularly Newtowns. Owing to the almost total failure of the English apple crop and the short crop in Canada, Mr. Birch looks on the coming season for the export of American apples with an optimistic rather than a pessimistic eye, and for this reason his firm is sending him into America for the first time to enlarge its export business. The Poupart company, which has one of the largest fruit and produce warehouses in England, has connected with its firm men who have long been identified with handling fruits on a big scale, and recently secured the services of W. H. Press, who, during the war, had sole charge of supplying the English army and navy canteen departments with fruit and produce. Although Mr. Birch has established his headquarters during the apple shipping season at Vernon, B. C., he will make frequent trips into the Northwest section of this country.

According to a statement made to the Hood River Glacier by C. W. McCullagh, sales manager of the Hood River Apple Growers' Association, who recently returned from an Eastern trip, any pronounced activity in the box apple trade will probably hold off until around the holidays. Mr. McCullagh says that the big Eastern districts will produce 65 per cent more apples than last year, a big percentage of which will have to be gotten out of the way before the market opens in a large way for box apples. He believes, however, that the better storage facilities provided and the superior keeping and other qualities of apples from this section will later allow the Northwest apple crop to clean up in good shape.

Far from satisfied with the recent increase in freight rates on fruit shipments from the Pacific Northwest, both citrus and deciduous fruitmen, it is stated, will continue the fight against the new rates. Data to show that the increase is discriminatory and will seriously handicap the fruit-growing industry on the coast is now being prepared and will be presented to the Interstate Commerce Commission in the near future. It is pointed out that a box of oranges from California, when shipped to New York, will be required to pay approximately a freight charge of \$2.00, and that

The Dry Season

It is during the dry season that the belt is put to its greatest test. Water for stock and for irrigation is an absolute necessity. A breakdown for a few hours may mean a heavy loss. You cannot afford to use a belt that does not have the dependable qualities of the "TEST SPECIAL."

"TEST SPECIAL" RUBBER BELTS

are made for long, hard drives. They stand up under the severest of strains because they are made right.

Stocked in San Francisco in all sizes from 1-inch to 24-inch, inclusive. Each belt is tested before leaving factory and fully guaranteed to give long and continuous service.

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WRITE TODAY, giving the R. P. M. and diameter of the driving pulley—also driven pulley and distance between centers of same; also give the rated horsepower of your motor or engine, and name kind of machinery you are operating. We will reply immediately, giving you our recommendation as to kind of belt to use.

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a box of apples of half the weight a proportionate increase. This means that the fruit must be sold to the consumer at such an increased figure in order to insure the grower a reasonable profit that fruitmen believe that the Northwest fruit industry will be seriously injured.

The maximum control prices on apples, which will go into effect on November 15th in England, is as follows: Home-grown apples, first owners' price, 63 shillings per hundredweight; imported apples, first owners' price, Nova Scotia, 62 shillings per barrel; Canadian, Maine, Virginian and Western States, 68 shillings per barrel; British Columbia, Washington, Californian, Oregon and Australasian, 21 shillings 6 pence per case of not less than 37 pounds; British Columbian, Washington, Californian, Oregon and Australasian, 23 shillings 6 pence per case of not less than 40 pounds. Any variety of imported apples, 60 shillings per hundredweight.

Ridley & Houlding, of London, England, who have made a specialty of handling box apples from the Northwest for several years, are again in the field this year, and with other English importers are reaching out for increased tonnage. This firm, which handles apples from any part of the globe where they are grown, has recently issued an attractive booklet showing views of the salesrooms. In one of these views is shown a room with large piles of box apples being offered to the trade. In contrast to this, on the opposite page, is a picture of the domestic apple handling room, where the apples are packed in basket hampers. These hampers, which are round with a flat top and bottom, have a lid attached, and when emptied by the retailer, are returned to the jobber, who has his name painted on them in big letters. Other views in the booklet contain pictures of the private offices of Mr. Ridley and Mr. Houlding at their desks, the accounting room and other sections of the big establishment.

The Eastern cranberry crop will bring \$10.00 per barrel this year, according to Cape Cod, Mass., growers who figure that the additional cost of labor and containers make it necessary for them to bring this price. At this figure Pacific Coast cranberry men are expecting a price fully in proportion to that of the Eastern berry.

What They Are Doing in California

Desiring to make unassailable their position as a strictly legitimate non-profit co-operative growers' selling organization, and in an attempt to comply in every way with the spirit as well as the letter of both Federal and State laws governing growers' co-operative marketing associations, the Board of Directors and Trustees of the California Prune and Apricot Growers, Inc., voted recently to change the form of their organization from a corporation to a non-capital stock association.

Reorganization of the California Prune and Apricot Growers, Inc., along these lines will, according to a statement issued by the association, be begun immediately by altering the form of contract now signed by the growers when they join the association. The reorganization will be completed by 1922, when all of the present contracts held by the association with its 10,000 grower members expire.

H. G. Coykendall, General Manager of the association, says that the reorganization plans voted by the California Prune and Apricot Growers, Inc., were in no way influenced by the suit filed in Los Angeles by the Federal Trade Commission asking for the dissolution of the California Associated Raisin Company on the grounds that it was a monopoly in violation of the Sherman anti-trust law.

Coykendall explained that the changes to be made by the California Prune and Apricot Growers, Inc., were the result of a series of informal conferences held between the representatives of the association and the Federal Trade Commission. At these meetings, which began last February and have extended over the intervening seven months, Coykendall said there was a frank and open discussion as

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Potato Graders and Sizers
Price Fruit Sorters and Sizers
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Before You Buy Others

We maintain a consulting department which will be very glad to advise with you in planning the installation of equipment for your packing house or warehouse

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to just what the purposes and objects of growers co-operative associations should be.

At the conclusion of these conferences a few weeks ago the Federal Trade Commission had no suggestions to make for a reorganization of the prune growers' association, and Coykendall emphasized that the changes voted were entirely voluntary on the part of the association.

In the statement issued by the California Prune and Apricot Growers, Inc., it was said that the Federal Trade Commission always has recognized that the prune association could not in any sense be looked upon as a monopoly because of the already large and steadily increasing Oregon and Washington prune productions.

Justifying the commission's attitude, it was pointed out that the Oregon and Washington prune crop, under normal conditions, totals approximately 80,000,000 pounds as compared with an estimated California yield of about 175,000,000 pounds. Of the combined production of 255,000,000 pounds, the California Prune Growers' Inc., markets less than one-half.

Cannery Notes

As an aid to increased financing of canning operations, the plan of issuing warehouse receipts by a duly incorporated warehouse company is being suggested. This plan is proposed after the legal requirements in each state are passed upon. If there is no obstacle in the way, the procedure suggested is, after packing begins and the finished product commences to accumulate, to issue negotiable warehouse receipts, which the canner may present to local banks as collateral.

As a result of the campaign of the National Canners' Association for a rigid inspection of all canned goods, canned foods are said to be making their appearance on the market bearing the sanitary inspection seal. As the use of the seal went into effect this season, its appearance on grocers' shelves so soon is called attention to as showing the rapid distribution of the new canned goods crop.

The announcement is made that Atlantic City, N. J., has been chosen as the meeting place for the fourteenth annual convention of the National Canners' Association. The dates will be January 17 to 21, next. The canners of the country gave serious consideration to holding their convention on the west coast, but decided not to do so owing to the increase in railroad rates and traveling expenses.

Residents of Warren, Oregon, are reported to be planting many acres of loganberries in anticipation of the erection of a plant there capable of handling 100 acres of fruit. Capital sufficient for a plant to be built either at Warren or Houlton is said to be assured.

J. M. Lane, manager of the Idaho Canneries, Inc., of Payette, who recently returned from the East, reports the sale of the entire output

of the plant for this year. In Chicago alone he sold 5,000 pounds of apple butter. The cannery also recently sold 80,000 pounds of cherries to a Denver firm.

The new cannery at Oroville, Wash., is reported to have closed the largest contract for canned goods ever made in North Central Washington. The contract consists of the delivery of 2,000 tons of tomatoes, which it is putting up from a large acreage in the West Okanogan district.

Notwithstanding the shortage of pears, G. B. Kille, superintendent of the Libby, McNeil & Libby cannery at Yakima, Wash., states that before the close of the season he expects that the tonnage of pears put up will equal that of last year.

One of the largest central warehouses in the Northwest for storage of canned fruits and vegetables has just been completed for A. Rupert & Co., Inc., in Portland, Ore. operators of eight big canneries in Oregon and Washington. The new structure, which is of brick, is capable of handling 100,000 cases of fruit. Operation has already begun in the newest of the Rupert plants, recently finished at Newberg.

What is believed to be the largest prune dryer in the Northwest is now in operation at West Salem, Oregon. The plant is 100x200 feet in dimensions and has a capacity of 2,000 barrels of prunes a day.

Between their two plants at The Dalles and Salem, Oregon, the Kings' Food Products Company will process a large tonnage of prunes this year. The Dalles plant will secure all the prunes to be had in that district and at Mosier, and in addition pack out 500 tons from the Willamette valley. The two plants, it is stated, will handle 1,400 tons of the green fruit.

Between 10,000 and 12,000 cans of beans a day was put up by the cannery at Coeur d'Alene, Idaho. The plant also put up large quantities of tomatoes. It will finish the season with apples.

Nine acres of ground will be covered by the factory of the American Can Company, now under construction in North Portland. It is to cost \$1,500,000 and will have a capacity of 100,000,000 fruit and salmon cans annually and about 50,000,000 specially designed containers for coffee, spices and the like. In the plant will be a complete lithographing shop for production of high-class labels.

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You can send your apples direct from the United States into the industrial centers of England. The same organization (J. & H. Goodwin, Ltd., throughout) which ships your fruit from the U. S. A., sells and distributes in London, Liverpool, Manchester and Hull, and on the European Continent.

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UNQUESTIONABLY—

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Modern methods applied to banking have made the FIRST NATIONAL BANK pre-eminently the ally of the horticulturist. Its facilities, service and the personal interest of its officers are at your disposal.

THE FIRST NATIONAL BANK
OF PORTLAND OREGON
THE FIRST NATIONAL BANK WEST
OF THE ROCKY MOUNTAINS

Propagation of Apple Trees, Etc.

Continued from page 5.

the nursery as Bough. Furthermore, observations made on digging the trees fail to discover any noticeable correlation between vigor and rooting. It has seemed to the writer that a small, weak tree was as likely to be rooted from the scion as a strong one.

Some varieties branch more freely than others. During the season of 1916 a block of yearling whips branched quite freely from the newly formed axillary buds. Notes taken at the time are as follows: No branches, Northern Spy; few, Baldwin, Bough, Ildenburg, Tolman; all, Transcendent (Crab). This gives no indication of any correlation between rooting from the scion and branch growth from axillary buds. A more reasonable expectation might be for a correlation between root formation and branching from adventitious buds on the stem. No exact record of branching from adventitious buds is available, but limited general observation of the behavior of budded trees leads the writer to believe that such a correlation may exist, and that Bough and other free rooting varieties do send out shoots from adventitious buds more freely than Tolman and other varieties that root only sparingly. Further and more definite records may prove or disprove this belief.

The relation of callus formation in cuttings has been referred to. Unfortunately no full notes of callus formation on the cuttings set was kept, but it is suggestive to point out that Yellow Transparent, which uniformly gave as large a callus as any variety, did not root as well as Wagener, which never gave any sign of callus formation.

Neither can we discover any relationship between rooting from the scion and season of maturity, either of fruit or wood, nor in size of leaves or density of foliage.

Many woody plants are propagated from cuttings, and in general it is those with soft wood that grow most readily. There is considerable variation in hardness of wood among different varieties of apples, and we may inquire if those with softer woods are the ones that root most readily from the scion. No extended investigation of this question has been made at this station. Beach and Allen made extensive tests of the hardness of wood of different varieties. They found considerable difference within the variety, and a clear comparison of their results with rooting ability, as shown by their investigation, is difficult, but a general survey of their results leads to a belief that there is a general correlation. It is, however, subject to exceptions. Beach and Allen of the Iowa Experiment Station came to the conclusion that there was a correlation between hardness of wood and resistance to winter cold, and here again there seems to be a rather loose correlation with rooting ability. Oldenburg and Wealthy are very hardy and root poorly, and Bough is tender and roots well. But Ben Davis is quite hardy and roots comparatively well, and Hubbardston and Tolman are less

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hardy than Wealthy and do not root so well.

Wide variations in the rooting ability of different lots of the same variety are evident. Some of these are clearly seasonal. Such differences may be due to climatic conditions, to soil conditions—for the soils used in different years are not all alike—or they may be due to difference in the scions used. Any such difference would most likely trace back to the growing conditions the previous season as affecting stored food and possibly structure. Slight differences in cultural treatment may have had an effect. Varying rainfall may have had an influence. It is impossible from the evidence at hand to determine which of these possible factors have had an influence and to what extent.

Summary

1. Stem cuttings of the common apple grow only rarely; in the trials here reported none succeeded, though callus formation in some varieties was good.

2. Root cuttings grew well, especially when young roots were used, though growth was slow the first season.

3. Limited tests indicated that most varieties may be readily propagated by mound layers.

4. The best means of establishing trees on known roots is by the nurse-root method. The scion is whip-grafted on a short piece of root and planted deeply; at the end of one or two seasons' growth the tree is dug, the seedling root removed and the tree replanted. Neither dwarf apple nor pear roots are of value as nurse roots.

5. Varieties vary greatly in the readiness with which they send out roots from the scion, the proportion varying from none to practically all with different varieties.

6. There is also great variation within the variety in the numbers rooting from the scion.

7. Varietal differences may be loosely correlated with density of the wood, the softer the wood the higher the proportion rooting from the scion.

8. A fertile, well drained, sandy loam probably offers the best conditions for securing a high percentage of rooting trees.

9. Once trees are established on known roots they may be propagated by root cuttings or by root grafting on known roots.

10. There seems to be a relation between the varietal ability to produce roots from the scion and the thickness of the cambium layer at the dormant season.

TREES AND SHRUBS



Fruit trees budded from bearing orchards. Apple, Pear, Cherry, Peach, Plum, Prune, Apricot, Quince, Grape Vines, Shrubbery, Plants, Raspberries, Blackberries, Logans, Dewberries, Asparagus, Rhubarb, Flowering Shrubs, Roses, Vines, Hedge, Nut and Shade Trees. Carriage paid. Satisfaction guaranteed.

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for the new orchard you are planning on
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Will give satisfaction to the planter

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“—all set for boxes”

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“because they’re ordered from the Bloedel Donovan Lumber Mills. It’s a satisfaction to use those Diamond B apple boxes. They are always first-class quality and the price is right.”

Order your boxes early. We ship promptly but freight deliveries are slow. Take no chances.

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Run down properties inspected and methods of renovation outlined.

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Sales of choice Nut, Fruit and Berry Properties.

(We are Agricultural College Graduates
with a wide orcharding experience)

PEARCY BROS., [Salem, Oregon]

Utilizing the Fruit Crop of the Northwest

Continued from page 7.

manner the process of abstraction does not injure the cellular structure of the commodity treated. His first successful demonstration was made in Australia in 1886. This antedates the work done in Continental Europe, that the U. S. Department of Agriculture has given as the origin of dehydration. Mr. Spawn claims to be the originator of dehydration. This man has operated on three continents and now has a headquarters plants in Seattle. The writer, however, could not find that he has anywhere now a commercial plant in actual operation.

The Northwest Company has a commercial plant in operation at Cashmere, Wash., that is giving special attention to cooking apples. The most important concern now operating in the Northwest, the writer found to be the King's Products Company of Portland. Two large plants are in operation. One at Salem and the other at The Dalles, Ore. This company is well financed and has under contemplation the establishment of a third branch plant. Its products cover a multitude of fruits and vegetables.

By-Products Plants of the Northwest.

Outside of those plants already named, two plants in Washington stand out as of primary importance. The first is the Puyallup and Sumner Fruit Growers' Association. This operates at three points. Puyallup and Sumner, Wash., and Albany, Ore. The total gross business done by this association in 1919 was 4¼ million dollars. This plant has made berry growing in the valley, where the headquarters are established, so valuable that the cash returns per acre for berry crops surpasses that received anywhere else known to the writer. Paul's jams or fruit butters are sold in every state in the Union, save two. In six months of 1919, 118,000 cases of jam were sold. This plant is a monument of success to the manager—W. H. Paulhamus.

The second plant of primary importance to the fruit industry is the preserving and canning plant of Libby, McNeil and Libby, of North



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FAR more land was cleared last spring in this section than in any previous year. The crops were bigger. Farmers made more money.

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Yakima. Situated as it is, in the largest fruit district of the whole Northwest, this plant has turned into economic value what would otherwise have gone to waste. Burlington, Wash., has a canning plant that cans certain tree and bush fruits, turning out 400 cases per day during the canning season. Bellingham, Seattle, Vancouver and other fruit centers in Washington, have valuable by-products plants of commercial and economic importance.

The state of Oregon alone has more than 50 by-products plants, all helping to conserve in some manner for table use some fruit or fruit juices. Who

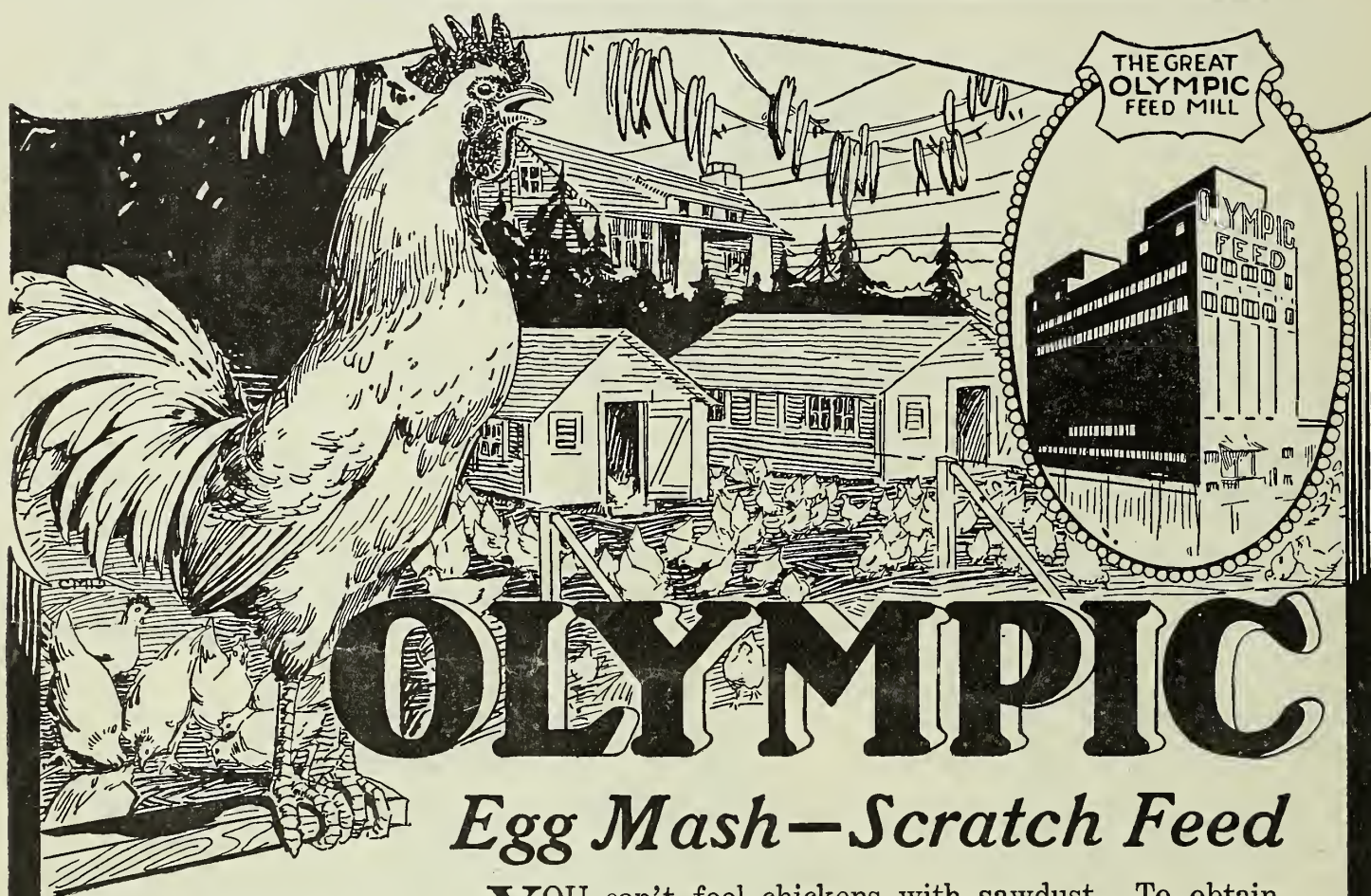
has not enjoyed the refreshing, exhilarating Phez, Applju and other fruit drinks of the Northwest?

It is this conservation of fruit foods, in canned goods, butters, jellies and jams, evaporated or dehydrated products, juices, flavors, extracts and gums that make the great Northwest fruit districts an object lesson to us all of efficiency, food conservation and marketing success.

The packing plant, we are told, loses nothing in the converting of the hog into pork; every part of his anatomy, from his snout to his tail, is put to some economic use—even his dying

squeal is now caught on the phonograph record and given anew in rhythmic cadence.

In the Northwest, the pits of the stone fruits are made to yield up their potash, the pumice is forced to give a stock food or a fertilizer and typical photos of the orchards are made into films by enterprising movie artists, and, in the far East, are ground out at so much "per" to the delight and education of unnumbered thousands. Conservation, utilization and efficiency seems to be the slogan of the fruit farmers and by-product workers of the Pacific Northwest.



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With Dried Buttermilk

is probably the most profitable market conditioner manufactured. Recently one of the largest wholesale poultry firms in the West, a concern that ships more than 10,000 birds a week, reported the following results of an experiment:

92 White Leghorns fed 100 lbs. of OLYMPIC Crate Fattener with Dried Buttermilk, gained 40½ lbs. in eight days.

A like number fed 180 lbs. of corn, oats, barley and semi-solid buttermilk, gained but 32½ lbs. in eight days, or at the rate of only 17½ lbs. per 100 lbs. of feed.

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MR. W. S. FREEMAN, a breeder of Single Comb White Leghorns of Hayward, California, writes as follows:

"During April when my hens fell off about 31% normal egg production, I tried OLYMPIC Scratch Feed and OLYMPIC Egg Mash with *Dried Buttermilk*. A test was made by feeding 200 hens on OLYMPIC Egg Mash dry in hopper and OLYMPIC Scratch buried in litter, as per instructions.

"In about two weeks the production drop was checked, furthermore a decided improvement was made in the condition of the hens. The feeds were greatly relished by the hens, too.

"I intend to continue using both the OLYMPIC Egg Mash and the OLYMPIC Scratch. Yes, sir, I highly recommend both feeds to every one. The splendid results obtained on my flock can be duplicated on your flock, too."

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For LIME-SULPHUR SOLUTION, use our DIAMOND "S" BRAND REFINED FLOUR SULPHUR. We can furnish you this sulphur at such a low price that it would pay you to mix your own solution and net you a profit equal to the amount paid out for labor in spraying your orchard, even if you pay your men \$5 per day for making the solution and applying same.

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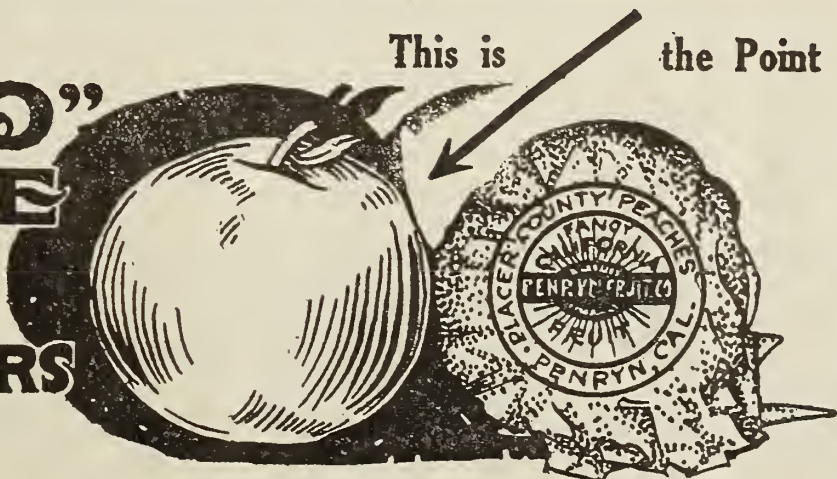
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(California)

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FIBRE
FRUIT
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"Caro" Protects****"Caro" from DessiCARE (to dry up)****"Caro"
Prolongs the
Life of Fruit
Why?**

Fruit decomposition starts from a bruise which opens tiny holes and permits the juice to escape and BACTERIA to enter.

"Caro" clings closely and dries up the escaping juice. "Caro" ingredients harden the spot, kill the BACTERIA, arrests the decomposition—and thus **PROLONGS THE LIFE OF FRUIT**. If your fruit is worth shipping it is worth keeping in best condition.

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There are no buildings on this place. The Pacific University, schools, churches, stores and amusements are at Forest Grove.

Owner to Retire.

The owner is a civil war veteran and is about to retire. This is the reason for offering this place for sale.

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